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EFFECTS OF PITUITARY ADRENOCORTICOTROPIC HORMONE (ACTH) THERAPY

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The discovery by Hench and co-workers [1] of the dramatic improvement in rheumatoid arthritis induced by the administration of certain steroids of the adrenal cortex and adrenocorticotropic hormone (ACTH) of the pituitary, has provided a clue to the pathogenesis of a wide variety of related diseases. These workers clearly established that 17-hydroxy-11-dehydrocorticosterone (Kendall's compound E, or cortisone), 17 hydroxycorticosterone (compound F) and pituitary adrenocorticotropic hormone produced immediate remissions in the disease, remissions which lasted as long as these substances were administered. Improvement was also obtained in patients with acute rheumatic fever.[2] Since this report appeared other investigators have confirmed these observations and widened the scope of disease states in which adrenocortical hormones are efficacious. Thorn and co-workers [3] have reported the successful use of pituitary adrenocorticotropic hormone in 9 patients with rheumatoid arthritis, 3 with rheumatic fever, 3 patients with disseminated lupus erythematosus and 1 with gout. Rheumatoid arthritis has also been reported to have responded with good results to cortisone by Boland and Headley [4] and to pituitary adrenocorticotropic hormone by Markson.[5]

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1. Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: The Effect of a Hormone of the Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosterone: Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis: Preliminary Report, Proc. Staff Meet., Mayo Clin. **24**: 181, 1949.

2. Hench, P. S.; Slocumb, C. H.; Barnes, A. R.; Smith, H. L.; Polley, H. F., and Kendall, E. C.: The Effects of the Adrenal Cortical Hormone 17-Hydroxy-11-Dehydrocorticosterone (Compound E) on the Acute Phase of Rheumatic Fever: Preliminary Report, Proc. Staff Meet., Mayo Clin. **24**: 277, 1949.

3. Thorn, G. W.; Bayles, T. B.; Massell, B. F.; Forsham, P. H.; Hill, R. S.; Smith, S., III, and Warren, J. E.: Medical Progress: Studies on the Relation of Pituitary-Adrenal Function to Rheumatic Disease, New England J. Med. 241: 529, 1949.

4. Boland, E. W., and Headley, N. E.: Effects of Cortisone Acetate on Rheumatoid Arthritis, J. A. M. A. **141**:301 (Oct. 1) 1949.

5. Markson, D. E.: Prolonged Treatment of Rheumatoid Arthritis with Pituitary Adrenocorticotropic Hormone (ACTH) J. A. M. A. **141**: 458 (Oct. 15) 1949.

These spectacular though transitory therapeutic successes have captivated medical and lay minds alike. Unfortunately, the wide publicity given to the subject has left the impression, at least with the laymen, that the suffering arthritic patient has but to await the volume production of these substances for a complete resolution of his problems. That such is not the case was indicated by the evidence presented at the recent conference of investigators of the problem, sponsored by Armour and Company in Chicago.[6] Two facts were apparent: (1) that the fundamental process by which adrenal cortical steroids affect these diseases is unknown and unmeasured in terms of the known metabolic functions of the adrenal cortex, and (2) that, although the use of pituitary adrenocorticotropic hormone and cortisone in human patients may result in dramatic remissions of these diseases, such use may also be attended with serious complications. The clinical and metabolic studies reported in this paper are a part of this evidence.

CLINICAL MATERIAL AND METHODS OF STUDY

Pituitary adrenocorticotropic hormone [7] was administered to 8 patients with the following diseases: juvenile rheumatoid arthritis (2), disseminated lupus erythematosus (2), dermatomyositis (1), acute rheumatic fever (2) and status asthmaticus (1). The duration of therapy and dosage of the compound varied considerably according to the supply of the adrenocortical hormone and to the clinical response of the patient. Treatment was discontinued in 4 patients because of failure to respond or because the supply of the drug was temporarily exhausted. The other 4 patients were treated for prolonged periods as long as one hundred and forty-nine days.

Metabolic studies were conducted for shorter periods at the beginning of administration and later in the course of therapy when indicated. The purpose of these studies was twofold: (1) to provide evidence that the adrenal cortex was being stimulated by the pituitary adrenocorticotropic hormone being injected, and (2) to assess the degree of stimulation of known functions of the adrenal cortex in relation to the clinical response of the disease in question. Besides counts of circulating eosinophils and total leukocytes, these studies included measurement of complete balances of chloride, sodium, potassium and nitrogen, of concentrations of electrolytes in serum, of urinary output of corticoids, 17-ketosteroids and, in 1 case, of urinary creatinine and uric acid. Tests for glycosuria and for decreased tolerance to dextrose were performed intermittently. Balance studies of electrolytes and nitrogen were conducted as follows: The patient was placed on a liquid diet consisting of fruit juices, ginger ale and whole milk fortified with lactose, and with eggs or protein concentrates.

6. Proceedings of the Conference on ACTH sponsored by Armour and Company, Chicago, Oct. 21-22, 1949.

7. Pituitary adrenocorticotropic hormone was supplied by Dr. John R. Mote of Armour and Company.

Periodically, aliquot parts of these fluids were analyzed. Urine was collected over periods of twenty-four hours. All stools were analyzed in cases 1 and 5. In the other cases stools were analyzed only when unformed; vomitus and transudates withdrawn from serous cavities were analyzed and included in the balances.

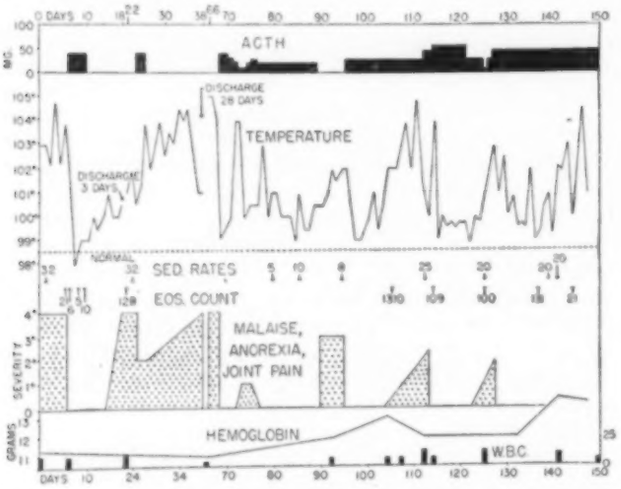

Fig. 1 (case 1).—Clinical chart and laboratory data on response of B. G., a girl aged 9 years, with acute rheumatoid arthritis, to treatment with pituitary adrenocorticotropic hormone (ACTH).

The following analytical methods were among those used: Circulating eosinophils were counted according to Forsham and associates'[8] modification of the direct method of Dunger. Chlorides in serum were measured by the method of Eisenman[9] and in the urine by the method of Harvey.[10] Sodium and potassium were determined in the Barclay internal standard flame

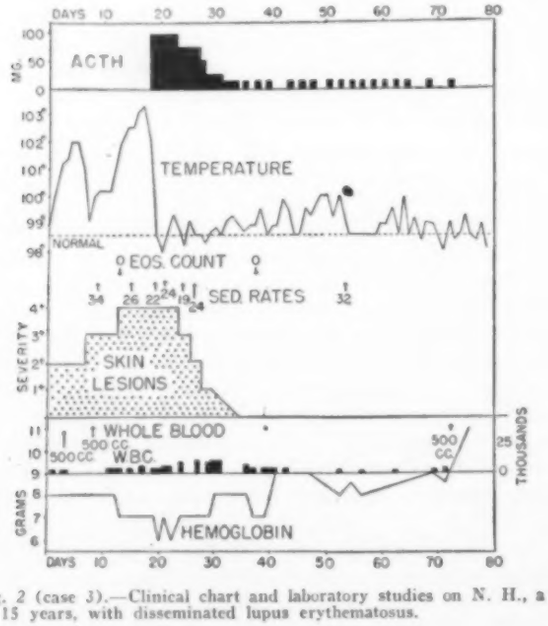

Fig. 2 (case 3).—Clinical chart and laboratory studies on N. H., a girl aged 15 years, with disseminated lupus erythematosus.

photometer[11] with a standard deviation of ± 0.79 per cent for sodium and ± 1.5 per cent for potassium. Liquid diets and stools were prepared for analysis of these cations by digestion with concentrated nitric acid as described by Wallace, Cushman and Elkinton.[11] Total urine nitrogen was determined by the microkjeldahl technic. Urinary corticoids were measured by a modification of the method of Heard, Sobel and Venning,[12] and 17-ketosteroids by a modified Holtorff-Koch method.[13] Blood sugar was determined by the Nelson technic.[14]

RESULTS

The clinical courses and metabolic data are presented in figures 1 to 7.

ACUTE RHEUMATOID ARTHRITIS

Case 1.—B. G., a white girl 9 years of age with a history of fever and swollen and painful joints for nine weeks, was treated intermittently with pituitary adrenocorticotropic hormone over a period of one hundred and fifty-two days (figs. 1 and 6). The patient responded dramatically to an initial daily dose of 40 mg. of the compound for four days but relapsed when the drug was withdrawn. Prolonged treatment begun on the

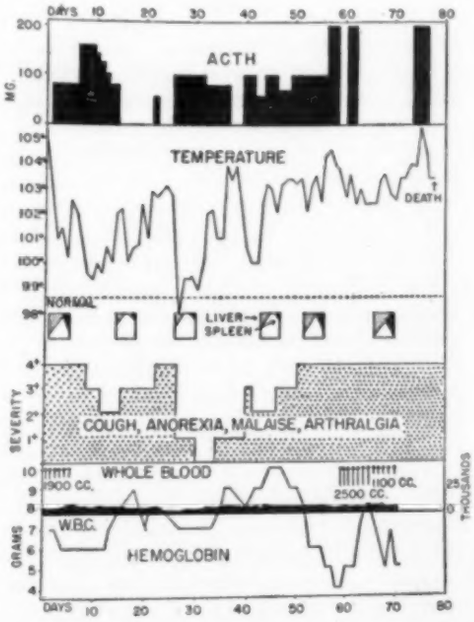

Fig. 3 (case 4).—Clinical and laboratory data on E. B., a woman aged 29, with generalized collagen disease (disseminated lupus type?).

sixty-eighth day of study resulted in improvement of symptoms, less fever and return of the sedimentation rate to normal until the period of the one hundred and fourth to one hundred and eleventh day. Beginning at this time larger doses (50 to 60 mg. of the agent per day) were progressively less successful in controlling the signs and symptoms of the disease. During this period there developed in the patient acne, oily hair and a definite moon-shaped (so-called Cushing's) facies; mild hirsutism had appeared following the first course of adrenocorticotropic hormone. The patient remained normotensive and without glycosuria. The drug was withdrawn on the one hundred and fifty-second day of study, and high fever and the signs and symptoms of her disease, which had been returning, promptly reached pretreatment level. Evidence of adrenocortical stimulation during the first course of treatment consisted in depression of circulating eosinophils, retention of sodium and increased excretion of corticoids and 17-ketosteroids; such evidence at the end of prolonged administration

8. Forsham, P. H.; Thorn, G. W.; Prunty, F. T. G., and Hills, A. G.: Clinical Studies with Pituitary Adrenocorticotropin, J. Clin. Endocrinol. **8**: 15, 1948.
9. Eisenman, A. J.: A Note on the Van Slyke Method for the Determination of Chlorides in Blood and Tissue, J. Biol. Chem. **82**: 411, 1929.
10. Harvey, S. C.: The Quantitative Determination of the Chlorids in the Urine, Arch. Int. Med. **6**: 12, 1910.
11. Wallace, W. M.; Cushman, M., and Elkinton, J. R.: The Application of the Internal Standard Flame Photometer to Analysis of Biological Material, to be published.
12. Heard, R. D. H.; Sobel, H., and Venning, E. H.: The Neutral Lipide-Soluble Reducing Substances of Urine as an Index of Adrenal Cortical Function, J. Biol. Chem. **165**: 699, 1946.
13. Holtorff, A. F., and Koch, F. C.: The Colorimetric Estimation of 17-Ketosteroids and Their Application to Urine Extracts, J. Biol. Chem. **135**: 377, 1940.
14. Nelson, N.: A Photometric Adaptation of the Somogyi Method for the Determination of Glucose, J. Biol. Chem. **153**: 375, 1944.

of the drug was found in the low eosinophil count and the high excretion rate of 17-ketosteroids (fig. 6).

CASE 2.—W. H., a white boy 5 years of age with a history of fever and painful and swollen joints for the preceding nine months, was given 25 mg. of pituitary adrenocorticotropic hormone daily for seven days (fig. 6). The patient became afebrile within twelve hours, and the painful swelling of the joints

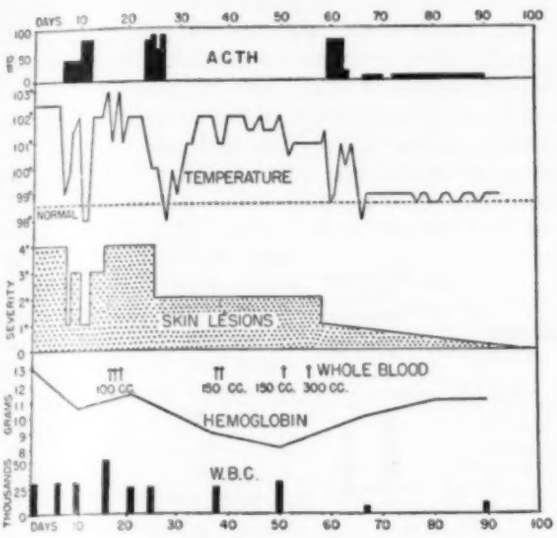

Fig. 4 (case 5).—Clinical and laboratory data on M. F., a boy 5 years of age with dermatomyositis.

subsided to a large extent within forty-eight hours. When the drug was withdrawn fever and symptoms promptly returned. The fall in eosinophil count and the slight retention of sodium indicated increased activity of the adrenal cortex.

DISSEMINATED LUPUS ERYTHEMATOSUS

CASE 3.—N. H., A Negro girl aged 15, had a typical butterfly-shaped cutaneous lesion of the face beginning eight months before admission and spreading to the neck, mouth and all four extremities; the diagnosis was supported by biopsy of the skin. After eighteen days of symptomatic treatment in the hospital, during which time she was febrile and critically ill, administration of pituitary adrenocorticotropic hormone was started in doses of 100 mg. per day (figs. 2 and 7). The patient became afebrile within sixteen hours, and the cutaneous lesions cleared within fourteen days. The drug was given in progressively smaller amounts, and treatment was discontinued fifty-one days later, on the sixty-ninth day of study. The course was complicated only by a transient episode of peripheral edema thirteen days after treatment with adrenocorticotropic hormone was started. The patient was normotensive and aglycosuric. The remission has remained fairly complete sixty days after the end of administration of the drug. Metabolic evidence of adrenocortical response to the agent was found only in the retention of sodium (fig. 7).

CASE 4.—E. B., a white woman aged 29, had subacute rheumatoid arthritis for eight months. During the six weeks prior to study there developed fever, hepatosplenomegaly, pleural effusion, cardiac enlargement, exudative and hemorrhagic retinopathy, leukopenia, and anemia which failed to respond to repeated transfusions. On admission the patient appeared moribund, the temperature was 105 F., the pulse rate 120, the respiratory rate 36 and the hemoglobin level 7 Gm. per hundred cubic centimeters. The bone marrow was hyperplastic, and an abnormal agglutinin was demonstrated,[15] which caused both autoagglutination and agglutination of donor's red cells. The admission diagnosis was generalized collagen disease of the disseminated lupus type, with hypersplenism.

An initial course of pituitary adrenocorticotropic hormone in daily doses of 75 to 160 mg. was associated with striking clinical improvement, fall in temperature and diminution of the hepatosplenomegaly (fig. 3). On the fourteenth day of study administration of the drug was discontinued because of temperature elevation following each injection of the hormone. Within five days the patient again became decidedly febrile, anorexic and critically ill. A generalized pruritus developed following a single test dose of the same lot of pituitary adrenocorticotropic hormone on the twenty-second day. From the twenty-sixth to the forty-fourth day, while receiving a new lot of the drug, the patient improved remarkably in all respects: the fever was less, the hemoglobin level rose, the hepatosplenomegaly continued to regress, the retinopathy cleared completely and the pleural effusion vanished. At about the forty-fourth hospital day the patient apparently became refractory to the agent; the fever returned, the liver and spleen again enlarged, the red blood cell count fell and pleural and pericardial effusions returned. Despite a final course of 200 mg. of the drug for each of three days, repeated blood transfusions, and repeated pericardial taps, the patient died with signs of cardiac tamponade on the seventy-eighth day. Necropsy revealed a polyserositis including fibrinous pericarditis with a hemopericardium, decided cardiac dilatation and hepatosplenomegaly. Histologic examination revealed collagen degeneration and focal necrosis with small round cell infiltration in the myocardium, passive congestion in the liver and spleen, and lipid depletion of the adrenal glands, which were normal in size. The pathologic diagnosis was collagen disease, type undetermined. During the first course of treatment with pituitary gonadotropic hormone the metabolic data indicate that the adrenal cortex was stimulated: the patient was in positive sodium balance and negative nitrogen balance; the urinary excretion of 17-ketosteroids was elevated (fig. 7). During the last days, when the patient appeared to be refractive to high doses of the drug just before death, the patient was not in positive sodium balance; however, the nitrogen balance became more negative, the excretion of 17-ketosteroids increased, and the urinary uric acid: creatinine ratio rose. Although these observations suggest some increase in adrenocortical activity, serum taken at this time was shown by complement-fixation[16] to contain in dilutions up to 1:128 an antibody to the pituitary adrenocortical preparation. Although this antibody did not react to hog serum as an antigen, it is not yet established whether this is a true antihormone or an antibody to other proteins in the preparation.

DERMATOMYOSITIS

CASE 5.—M. F., a white boy 5 years of age with a history of high fever, generalized cutaneous eruption and edema while receiving penicillin therapy for the preceding seven weeks, was admitted in an apparently moribund state with hypertension, cardiac enlargement, polyserositis and hepatomegaly. He was given three courses of treatment with pituitary adrenocorticotropic hormone (fig. 4). Following cessation of the first two courses the disease relapsed, but after the third and more prolonged course, which ended on the ninety-first day of study, the disease has remained in complete remission for the succeeding one hundred and seventeen days to the time of writing. During the second course of administration of 360 mg. of the agent between the twenty-third and twenty-seventh day, when the patient was eating little, potassium deficiency with hypokaliemia and alkalosis developed (fig. 7). The patient became stuporous, although the temperature had fallen to normal levels. Intravenous administration of potassium chloride and potassium phosphate solution[17] resulted

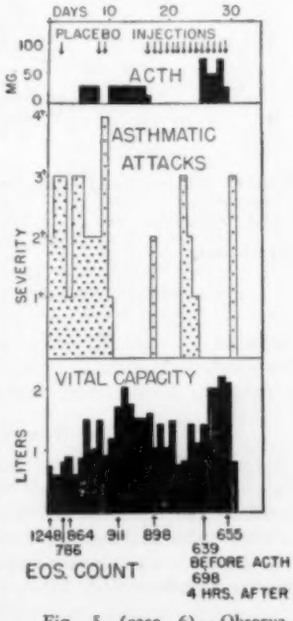

Fig. 5 (case 6).—Observations (clinical and laboratory) on E. T., a boy 12 years of age with status asthmaticus.

15. Dr. Neva Abelson, Children's Hospital.

16. Drs. Werner and Gertrude Henle, Children's Hospital.

17. Elkinton, J. R., and Tarail, R.: The Present Status of Potassium Therapy, Am. J. Med., to be published.

in a large uptake of potassium and loss of sodium by the cells of the body, and the patient became alert and vigorous despite withdrawal of the adrenocortical compound and return of fever. During the third course of treatment on the sixty-fourth day of study, a transient episode of encephalopathy occurred, which was characterized by coma, convulsions and increased intracranial pressure; the hypertension was not increased. Localizing neurologic signs did not develop, and complete recovery took place within four days.

Metabolic data were obtained at the time of the first course of treatment and following the second; unfortunately, balance studies were not performed during the second course, when severe potassium deficiency developed. Before the initial course the patient already had a low eosinophil count and was in positive sodium balance, but when administration of the adrenocortical hormone was stopped, the eosinophil count rose and the sodium balance became negative (fig. 7). The urinary excretion of corticoids and 17-ketosteroids rose during and after this course. The data suggest increased adrenocortical activity in response to the drug given.

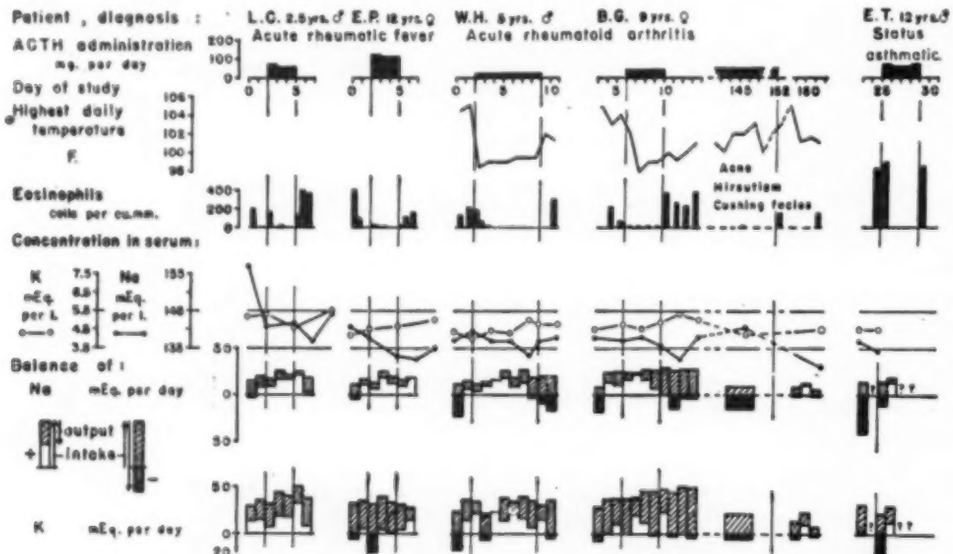

Fig. 6.—Metabolic data, cases 1, 2, 6, 7 and 8 (B. G., W. H., E. T., L. C. and E. P., respectively).

STATUS ASTHMATICUS

Case 6.—E. T., a white boy aged 12 years, had a history since infancy of intractable seasonal asthma due to pollens. Pituitary adrenocorticotropic hormone was given in three courses, with decided improvement in dyspnea, orthopnea and vital capacity, as compared to results during control periods of placebo injections (fig. 5).

ACUTE RHEUMATIC FEVER

Cases 7 and 8.—L. C., a white boy aged 2.5 years, and E. P., a Negro girl aged 12 years, both had active rheumatic myocarditis. A three day course of treatment with 60 and 120 mg. of pituitary adrenocorticotropic hormone per day, respectively, produced no change in the clinical pictures. Because of the limited amount of the drug, available, further treatment of these patients was not attempted. The cases are included because the metabolic data indicate that the compound was actively stimulating the adrenal cortex: there was a fall in eosinophil count, retention of sodium and increased excretion of urinary corticoids (fig. 6).

ANALYSIS OF RESULTS

Dosage and Clinical Response.—In 2 patients on long term treatment with pituitary adrenocorticotropic hormone, signs and symptoms of the disease returned despite increasing doses of the drug. These patients were B. G. (case 1), with rheumatoid arthritis (fig. 1), and E. B. (case 4), with generalized collagen disease (fig. 3). The other 2 patients on prolonged treatment, N. H. (case 3), with disseminated lupus (fig. 2) and M. F. (case 5) with dermatomyositis (fig. 4), responded to progressively diminishing doses of the adrenocorticotropic preparation and have remained in remission for some time after complete withdrawal of the hormone. In view of these observations it is obvious that the relation of clinical response to size of dose and duration of treatment with the drug will vary from case to case. Nevertheless, since these patients and 2 of those treated for short periods (W. H., case 2 with arthritis, and E. T., case 6, with asthma) responded dramatically to at least the initial administration of the agent, it is evident that this endocrine substance exerts a powerful and specific effect on these diseases. The failure of the 2 patients with acute rheumatic fever and myocarditis (cases 7 and 8) to respond to pituitary adrenocorticotropic hormone during three days of treatment only, warrants no conclusions in respect to the effect of the drug on this condition, as the therapeutic trial was obviously of insufficient length.

Metabolic Responses.—In 5 of the 8 cases, after the initial administration of the adrenocortical substance the circulating eosinophils fell to exceedingly low levels, as demonstrated by Forsham, Thorn, Prunty and Hills[a] to occur in subjects with intact adrenal cortical glands (figs. 6 and 7). In 2 patients (N. H., case 3, and E. B., case 4) eosinopenia already existed before the start of therapy and continued during the prolonged course. In E. T., case 6, the eosinophilia characteristic of the patient's disease, asthma, failed to respond to the drug, although the other data suggest increased adrenocortical activity.

In all cases sodium excretion in urine was low during the initial period of administration of pituitary adrenocorticotropic hormone (figs. 6 and 7), as reported by previous workers.[18] In most of our patients administration of the drug resulted in positive balances of

18. (*a*) McAlphine, H. T.; Venning, E. H.; Johnson, L.; Schenker, V.; Hoffman, M. M., and Browne, J. S. L.: Metabolic Changes Following the Administration of Pituitary Adrenocorticotropic Hormone (ACTH) to Normal Humans, J. Clin. Endocrinol. **8**: 591, 1948. (*b*) Sayers, G.; Burns, T. W.; Tyler, F. H.; Jager, B. V.; Schwartz, T. B.; Smith, E. L.; Samuels, L. T., and Davenport, H. W.: Metabolic Actions and Fate of Intravenously Administered Adrenocorticotropic Hormone in Man, ibid. **9**: 593, 1949. Forsham, Thorn, Prunty and Hills.[a]

sodium, although in N. H. and E. B. (cases 3 and 4) there were no adequate pretreatment balances and in M. F. (case 5) the patient was already in positive balance. In general, chloride followed sodium, and the endocrine preparation was apparently stimulating the salt-regulating hormone of the adrenal cortex. Conversely, in the 5 cases (1, 2, 5, 7 and 8; patients B. G., W. H., M. F., L. C. and E. P.) in which sodium balances were increased during administration of the drug, in the periods immediately after withdrawal of the agent the sodium balance returned to normal or became definitely negative; i. e., the retained sodium was excreted. During the later periods of adrenocortical therapy the 2 patients in whom sodium balances were measured (B. G. and E. B., cases 1 and 4) were no longer retaining sodium. Consistent changes were not produced in the serum concentration of sodium or chloride.

The effects of the adrenocortical hormone on transfers of potassium were less consistent than on those of sodium. In most of the patients studied the urinary excretion of potassium was not increased and the potassium content of the body, if changed, was increased (figs. 6 and 7). Exceptions to this trend were found in case 8, E. P., in case 4, E. B., during the last course of adrenocortical therapy, and probably in case 5, M. F., during the second course of treatment with the drug, when the serum concentration of potassium fell abruptly but when complete balances were not measured. There is less agreement in the literature on the effect of pituitary adrenocorticotropic hormone on potassium, the data of some workers showing an increased excretion and those of others a decreased excretion of the ion.[19] This lack of unanimity was further in evidence at the Armour conference,[6] where, in reports of the effects of the preparation in a multiplicity of disease states, potassium balances were reported to be positive and negative in about an equal number of instances.

Nevertheless, in 1 of our patients, M. F. (case 5), a cellular deficiency of potassium was at least exacerbated by the use of the adrenocortical agent, resulting in hypokaliemia, alkalosis, stupor and areflexia. It is significant that the patient was eating little (potassium intake was nil) and that larger doses of the drug had been given. When potassium was infused intravenously, the diagnosis was proved by the extensive uptake by body cells of potassium in excess of nitrogen, associated with loss of cellular sodium, and a return of the serum carbon dioxide content to a normal level (fig. 7). Other workers have reported similar episodes of potassium deficiency and alkalosis to have been produced by pituitary adrenocorticotropic hormone and by cortisone.[20]

The effects of the adrenocorticotropic agent on the nitrogen balance of our patients was not uniform. Only in cases 4, 5, 7 and 8 (E. B., M. F., L. C. and E. P.) may the excretion of nitrogen have been increased so that the balance became significantly negative (figs. 6 and 7). This is in accord with previous reports.[21]

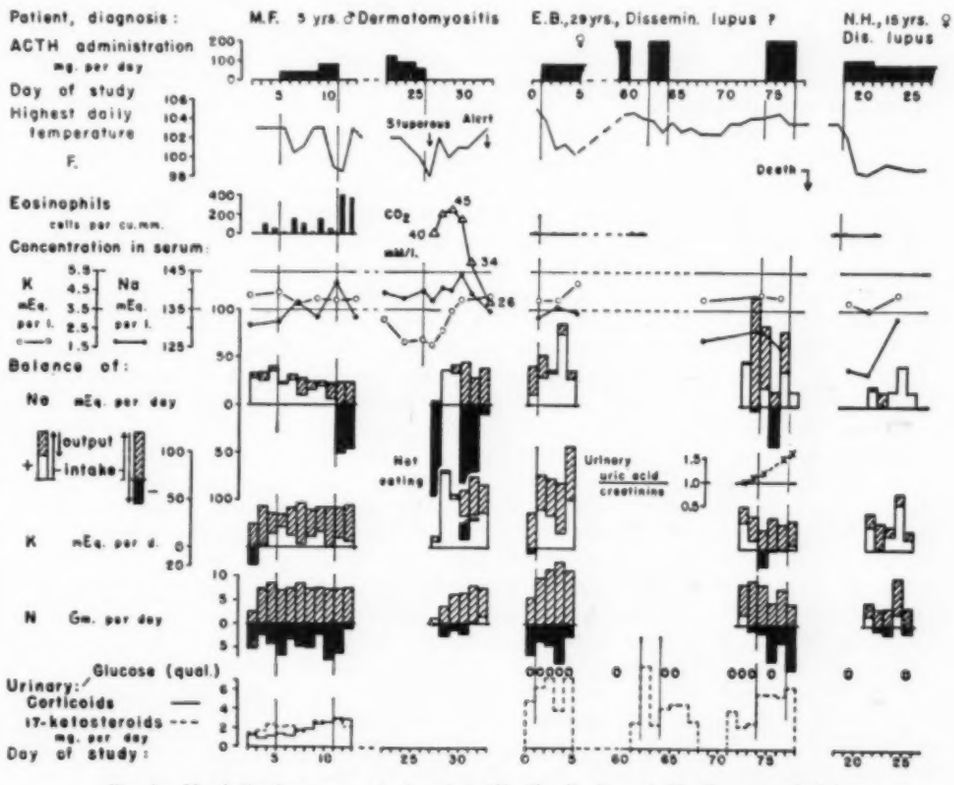

Fig. 7.—Metabolic data, cases 3, 4 and 5 (N. H., E. B. and M. F., respectively).

Carbohydrate metabolism was mildly but definitely affected by the pituitary adrenocorticotropic hormone given. In 3 of 7 cases a slight glycosuria occurred on the days when the agent was administered (figs. 6 and 7). Fasting blood sugar levels tended to rise, but only to the upper limits of normal or slightly above normal. Dextrose tolerance tests performed in case 2 (W. H.) before and one day after the start of adrenocortical therapy revealed a moderate decrease in tolerance. No such abnormality was found in case 3 (N. H.) ten days and thirty days after administration of the drug was begun or in case 1 (B. G.) on the one hundred and forty-second day of study, when some

19. (*a*) Mason, H. L.; Power, M. H.; Rynearson, E. H.; Ciaramelli, L. C.; Li, C. H., and Evans, H. M.: Results of Administration of Anterior Pituitary Adrenocorticotropic Hormone to a Normal Human Subject, J. Clin. Endocrinol. **8**: 1, 1948. (*b*) Bartter, F. C.; Fourman, P.; Forbes, A. P.; Jeffries, W. M., and Dempsey, E.: A Quantitative Analysis of the Effects of Adrenocorticotrophic Hormone (ACTH) on Potassium (K) and Phosphorus (P) Metabolism, J. Clin. Investigation **28**: 769, 1949. Footnote 18.

20. Pearson, O. H., and Eliel, L. P.: Postoperative Alkalosis and Potassium Deficiency, J. Clin. Investigation **28**: 803, 1949. Power, M. H., and Sprague, R. G.: Alkalosis and Low Plasma Potassium in Patients Receiving Adrenocortical Steroids or Adrenocorticotrophic Hormone of the Anterior Pituitary, Proc. Am. Chem. Soc., Sept. 18-23, 1949. Footnote 6.

21. (*a*) Conn, J. W.; Louis, L. H., and Johnston, M. W.: Metabolism of Uric Acid, Glutathione and Nitrogen, and Excretion of "11-Oxysteroids" and 17-Ketosteroids During Induction of Diabetes in Man with Pituitary Adrenocorticotropic Hormone, J. Lab. Clin. Med. **34**: 255, 1949. (*b*) Forsham, Thorn, Prunty and Hills.[8] McAlphine and others.[18a] Mason and others.[19a]

of the other signs of Cushing's syndrome had appeared. Severe glycosuria following administration of pituitary adrenocorticotropic hormone, as reported by Conn, Louis and Johnston [21a] was not observed in our series of cases.

The excretions of corticoids and 17-ketosteroids were uniformly increased with the administration of the adrenocortical hormone (figs. 6 and 7).

Complications.—(1) Severe potassium deficiency was induced in case 5, M. F. This complication can readily be avoided if the serum potassium level is followed and if the patient is receiving potassium at least in the form of food. (2) Encephalopathy, manifested by coma, convulsions and increased intracranial pressure, also occurred transiently in case 5, M. F. It was not possible to determine whether this episode was due primarily to the underlying disease or to the adrenocortical preparation. If it was due to the latter, it must have been related to localized cerebral edema; the hypertension present was not exacerbated. (3) Signs of Cushing's syndrome or hyperadrenocortical function appeared in case 1, B. G., after prolonged treatment with the drug, at a time when the dosage was not sufficient to maintain the remission of the patient's arthritis. Although hypertension and diabetes mellitus had not appeared, the complication was sufficiently serious to warrant discontinuation of this form of treatment when it appeared that an increase in the dosage of the drug was necessary to control the disease. A number of other investigators [6] have reported the appearance of some of the stigmas of Cushing's syndrome during prolonged courses of treatment with pituitary adrenocorticotropic hormone. (4) Development of a state refractory to the agent was conclusively demonstrated in case 4, E. B., by the death of the patient. Possible factors in this refractoriness were the presence of an antihormone to the drug, adrenocortical exhaustion, and failure of the end organs to respond to adrenocortical hormones. From the data it is not possible to state whether any one of these factors alone was responsible. Serologic studies indicated that some type of antibody to the adrenocortical preparation was present. Metabolic data (decreased nitrogen balance, increased uric acid: creatinine ratio and increased urinary 17-ketosteroids) suggested that the adrenal cortex was still capable of responding to the drug, at least in part. The adrenal glands were depleted of lipid substances but were not hypertrophied. Had cortisone been available, it might have been possible to demonstrate whether or not the diseased end organ could respond to adequate amounts of adrenocortical steroids in the presence of a nonfunctioning adrenal cortex. Whatever the cause of the refractory state, pituitary adrenocorticotropic hormone failed to save this patient's life.

COMMENT

In the light of the studies of many workers as well as of the observations reported herein, it is clear that pituitary adrenocorticotropic hormone and certain adrenocortical steroids may profoundly modify the course of the so-called collagen diseases. Thus a clue is provided to the pathogenesis of this group of disorders, which according to Rich [22] are fundamentally hypersensitivity states. However, the exact role of the adrenocortical hormones in these states is still completely unknown, because the effect of pituitary adrenocorticotropic hormone and cortisone on the clinical course of these diseases cannot be related to the known functions of the gland.

The known specific functions of the adrenal cortex include the regulation of sodium and potassium excretion, the stimulation of gluconeogenesis and inhibition of carbohydrate utilization, and the androgenic function leading to nitrogen and potassium retention and increased excretion of 17-ketosteroids. Although our data indicate that all these functions were affected by the administration of pituitary adrenocorticotropic hormone, the increase in function was not great. For the most part sodium retention was moderate, and there was little effect on the potassium level, perhaps because of antagonistic action of the desoxycorticosterone-like hormone and the androgenic hormone. The diabetogenic process was barely perceptible, and the nitrogen excretion was not greatly increased. Although the 11-oxysteroids, especially 11-dehydro-17-hydroxycorticosterone (cortisone, or compound E) have been shown to be the most effective steroids in controlling arthritis as well as in regulating carbohydrate metabolism, it would appear that these two functions are not closely linked. The question of how these adrenocortical steroids affect the course of the diseases under discussion is still unanswered.

Although the mode of action of adrenocortical hormones in these diseases is still unknown, they are the most effective therapeutic tools to date. However, there is much to learn concerning the therapeutic use of pituitary adrenocorticotropic hormone and of cortisone. The series of complications encountered in their use make this all too evident. Some of these complications, such as potassium deficiency, can undoubtedly be prevented. Others, such as development of some of the signs of Cushing's syndrome, may be less serious than they are thought to be at present. To our knowledge, significant hypertension and severe diabetes have not yet been reported in conjunction with the other signs of this syndrome as produced by pituitary adrenocorticotropic hormone. Longer periods of observation will be required to assess the seriousness of this complication. Since complications disappear on withdrawal, the use of repeated short courses may be a means of avoiding some of them. But the fact that these complications have been encountered necessitates considerable caution in accepting pituitary adrenocorticotropic hormone and cortisone into general therapeutic usage, at least without careful clinical and laboratory supervision.

SUMMARY

1. Pituitary adrenocorticotropic hormone (ACTH) was administered to 8 patients with the following diseases: acute rheumatoid arthritis, disseminated lupus erythematosus, dermatomyositis, status asthmaticus and acute rheumatic fever. In all except the 2 patients with acute rheumatic fever, the signs and symptoms showed an abrupt remission of the disease following the initial course of treatment with the drug.

2. Metabolic studies during the initial courses of adrenocortical therapy showed a fall in eosinophils, sodium retention, potassium retention in some cases and potassium loss in others, occasional increased negative nitrogen balance and increased excretion of urinary corticoids or 17-ketosteroids. Slight glycosuria and a small rise in fasting blood sugar occurred in a few instances. These data indicate stimulation of the adrenal cortex.

22. Rich, A. R.: The Role of Hypersensitivity in Periarteritis Nodosa, Bull. Johns Hopkins Hosp. **71**: 123, 1942. Rich, A. R., and Gregory, J. E.: The Experimental Demonstration that Periarteritis Nodosa Is a Manifestation of Hypersensitivity, ibid. **72**: 65, 1943; On the Anaphylactic Nature of Rheumatic Pneumonitis, ibid. **73**: 465, 1943.

3. Four patients were treated for prolonged periods. One patient with lupus and one with dermatomyositis, both apparently moribund before therapy, have maintained remission of symptoms after cessation of treatment with the drug. One patient with disseminated lupus or generalized collagen disease became refractory to the drug and died. One patient with acute rheumatoid arthritis tended to obtain lessening degrees of relief from increasing doses of the adrenocortical preparation, which had to be withdrawn because of the appearance of signs of Cushing's syndrome.

4. The development of these complications of refractoriness to the drug, of Cushing's syndrome, of potassium deficiency and of encephalopathy, suggests that the therapeutic use of pituitary adrenocorticotropic hormone must be approached with great caution.

SUPPORTIVE THERAPY DURING ANESTHESIA AND OPERATION

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The emergency nature of the situation which accompanies the onset of a failing circulation demands a constant vigilance of the anesthesiologist and an always readily available method of supportive treatment. Often the decisions that are necessary at this time are of sufficient importance to affect the welfare of the patient materially.

Such situations may occur during traumatic operative procedures, hemorrhages and so on. The internist also meets such situations in cases of coronary thrombosis, pneumonia and other entities. However, it is not within the province of this paper to discuss these medical conditions.

Because these conditions of altering and failing circulation are being considered primarily for the surgical patient and because the anesthesiologist often is the person responsible for the supportive therapy during this period, he must be cognizant and watchful of the patient's condition.

Shock is a word so firmly established in everyone's vocabulary that its exact meaning is somewhat confused. Davis [1] has enumerated twenty-five different definitions of the word. Such an array of definitions in itself shows the multiplicity of ideas, and the confusion of definite opinions. This may be attributed in part to the great number of causes of failure of circulation and in part to lack of understanding of the physiologic mechanism.

In 1878 Claude Bernard [2] wrote: "All the vital mechanisms, however varied they may be, have only one object, that of preserving constant the conditions of life in the internal environment." This state of equilibrium is maintained by the integrative cooperative function of many organs, including the nervous system, heart, lungs, kidneys, spleen and liver. This fact is important because it provides a foundation for one's understanding of the response of living organisms to various types of strains and stresses.

The reaction of the patient depends on the severity and duration of the insult and the ability of the patient to adjust the homeostatic mechanisms, that is, the redistribution of blood from the less vital peripheral regions to regions more sensitive to anoxia; for example, brain, lungs, liver and heart. There is evidence to suggest that this adjustment is less efficient in some persons than in others.

From the Section on Anesthesiology, Mayo Clinic.
Read before the Section on Anesthesiology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

1. Davis, H. A.: Shock and Allied Forms of Failure of the Circulation, New York, Grune & Stratton, 1949.
2. Bernard, C., cited by Davis,[1] p. 12.

DIAGNOSIS

The recognition of shock and various degrees of related forms of circulatory failure ordinarily is not difficult, but unfortunately shock does go unrecognized at times. When one is evaluating the condition of a patient after any shock-producing circumstances there are three factors to consider: the type of insult, the severity of circulatory failure and the prognosis.

The signs and symptoms of traumatic shock depend on certain factors: (1) extent and rate of reduction of blood volume; (2) duration of this phenomenon; (3) associated injuries, and (4) efficiency of the body in its homeostatic processes.

Whether the failing circulation is the result of trauma, extensive operative procedure or hemorrhage, the clinical picture is much the same.

Familiarity with the condition of the patient infinitely helps one to evaluate the possibility of a failing circulation. An anesthesiologist should be able to tell at all times how the patient is progressing. It is a little more difficult for those anesthetists who are supervising the anesthetization of several patients, but they too gain a sense of quick evaluation which becomes a valuable aid in the simultaneous care of several patients. Whether the patient is awake or asleep is important; knowledge of the premedicaments administered and the possible sensitivity of patients to the medicaments is of help. In a conscious patient the ability to answer questions quickly is informative; a slow indefinite answer from the patient makes one suspicious of some untoward condition.

The color of the skin, that is, pale, pink or cyanotic, is important. A hot, warm, cool or cold skin also is informative as far as the degree of peripheral vasoconstriction is concerned. The skin temperature can be judged by feeling the nose, forehead, ears, hands and feet.

A rapid estimate of loss of fluid—that is, in hemorrhages, sweating, vomiting, urine and feces—is important. Blood lost by hemorrhage or through the operative procedure is frequently difficult to estimate, but it is believed that in many instances more blood is lost in an operation than is realized. An examination of the blood for hemoconcentration or hemodilution is not of great value in disclosing the extent of loss. An estimation of blood volume is more reliable.

The evaluation of the state of the circulation is an important part of the examination.

CLINICAL OBSERVATIONS AND TESTS

Pulse Rate.—The rate, rhythm and quality of the pulse should be observed. Other things being equal, the more rapid the pulse, the poorer is the circulation. With an exceedingly low pressure the pulse may be imperceptible at the wrist. To feel the pulse it may be necessary to palpate the carotid artery.

In some instances when the peripheral vasoconstriction is extreme the radial pulse may not be palpable, yet the blood pressure may be within normal limits or even elevated. The presence of such irregularities as extrasystoles, alternating pulse and fibrillation may be indicative of severe disturbance of the blood supply to the heart. When these irregularities appear it may be

during the terminal phase of a circulatory failure. A sudden increase in the pulse rate may be a sudden intensification of whatever condition is aggravating the situation.

Blood Pressure.—Determination of the blood pressure is one of the important and also practical methods of evaluating the circulation. During the operative procedure the blood pressure should be recorded at regular intervals. The height of the blood pressure depends on the response of the patient's circulatory condition. This blood pressure may vary from hypotension to hypertension.

It is entirely possible to have a loss of blood volume and yet have a blood pressure within reasonably normal limits for the patient. This is particularly true during the early phase of shock. If such is the case, when the blood pressure does fall it may do so rapidly. For this reason a chart of repeated readings should be kept. It is important to have a serial recording of the pulse pressure. Not infrequently the diastolic pressure is too low to enable one to determine it accurately.

It would be convenient if some arbitrary level could be chosen so that one could say, "Below this level, shock is present." However, this is not entirely practical. This level, if it could be used, would vary according to the patient's normal blood pressure level. A hypertensive patient may be in a relatively precarious condition if his systolic pressure declines to 100 mm. of mercury. However, an average normal systolic pressure may drop to 80 mm. of mercury before much concern need be felt.

Circulation Time.—Because the blood pressure and the pulse rate are not always infallible criteria of shock, the circulation time may be determined if the patient is conscious and cooperative.

Tarr and his associates [3] have shown by using the dehydrocholic acid (decholin®) method that the circulation time varied from 10 to 16 seconds. In shock it may be shown that the circulation time is prolonged.

The Tilting Test.—The tilting test is based on the fact that the upright position produces a stress on the circulatory system. The idea on which this test is based is that the increase in pulse rate with a slight fall in systolic blood pressure and moderate increase in the diastolic pressure occurs when the patient is brought from the supine to the semiupright position. In the presence of a reduction of blood volume the ability of the cardiovascular system to withstand the additional stress of the upright position is reduced. This observation was first made by Shenkin and associates [4] in 1943.

The Tourniquet Test.—The tourniquet test was introduced by Longmire and associates [5] in 1944. The observation has been made that in the presence of a decreased blood volume an artificial temporary reduction of the circulating blood volume by means of a tourniquet will result in a fall of the arterial blood pressure. The procedure is done by applying blood pressure cuffs to the upper parts of the thighs. The cuffs are inflated to a pressure just above the diastolic blood pressure level. In a normal person changes in blood pressure do not occur, but in a patient suffering from shock or hemorrhage a fall in the arterial blood pressure will occur. The response obtained from this test depends on (1) the extent of loss of blood volume and (2) the efficiency of the homeostatic mechanism.

The Hyperemic Test.—DiPalma and Foster [6] introduced the hyperemic test in 1942. It consists in placing a weighted rubber ring on the skin of the flexor surface of the forearm. "The minimal length of time, expressed in seconds required to elicit hyperemic rings of uniform coloration, uniform width and discrete edges is noted as the stimulus time or threshold. The length of time required for the hyperemic rings to fade completely is noted as the cleaning time." The threshold varies from 10 to 15 seconds in summer to 60 to 67 seconds in winter. Generally speaking, the greater the flow of blood through the skin, the shorter is the threshold. The response of the test depends on (1) the extent of reduction of the blood volume and (2) the degree of cutaneous vasoconstriction.

LABORATORY EXAMINATIONS

Too much emphasis should not be placed on the information obtained from these laboratory methods. Instead the observation and examination of the patient's condition by a competent physician should play an important part in deciding the course of treatment.

Blood volume determination does not measure the efficiency of homeostasis, but it is the ideal method of determining the degree of stress from hemorrhage or shock. The blood volume may be measured by injections of Evan's blue dye.

At the same time, however, an estimation of the erythrocyte count, taking into account the presence or absence of hemorrhages, anemia, dehydration states and so on, may be informative. A differential leukocyte count may show lymphocytopenia which is proportionate to the degree of stress encountered. A hemoglobin estimation should be done, but a hematocrit reading is more accurate in detecting hemodilution or hemoconcentration.

The specific gravity of the blood, plasma or serum may be determined by the falling drop method.[7]

A serum protein estimation with a determination of the albumin-globulin ratio may distinguish the reduction of the plasma volume due to loss of whole plasma from that due to loss of the water as a result of dehydration.

The nonprotein nitrogen and urea nitrogen levels are valuable in the early prediction of the failure of renal function which not infrequently accompanies shock and hemorrhage.

Carbon dioxide–combining power of the blood usually is reduced only after the blood pressure has fallen to less than 80 mm. of mercury; therefore, in early shock it is of relatively little value.

STAGES OF SHOCK

Davis [1] has divided circulatory failure into five stages:

Primary Shock.—Primary shock does not involve a reduction in blood volume necessarily. It usually appears a few minutes after injury, particularly if much pain is associated with the injury. The skin becomes cold, clammy and pale, sweat appears on the face and the patient may lose consciousness. The blood pressure may become low and the pulse pressure is reduced. The signs and symptoms are due to reduced venous return, with a decreased cardiac output resulting in cerebral anemia. Spontaneous recovery usually

3. Tarr, L.; Oppenheimer, B. S., and Sager, R. V., cited by Davis,[1] p. 47.
4. Shenkin, H. A.; Cheney, R. H.; Govons, S. R., and Starr, I., cited by Davis,[1] p. 46.
5. Longmire, W. P., Jr.; Duncan, G. W., and Blalock, A., cited by Davis,[1] p. 46.
6. DiPalma, J. R., and Foster, F. I., cited by Davis,[1] p. 46.
7. Barbour, H. G., and Hamilton, W. F., cited by Davis,[1] p. 45.

occurs quickly if the patient is placed in a horizontal or a head-down position.

If this treatment is not favorable to the patient, it is possible that secondary shock may be developing.

Impending Secondary Shock.—Half an hour to twelve hours after the primary insult impending secondary shock may occur. It may take place on the operating table. Before the latent shock appears, the patient may be quiet, talkative or extremely restless. During this period the blood pressure may be within normal limits or even a little elevated. The pulse may be 60 to 150 beats per minute. The tilt test, the tourniquet test and the estimation of the circulation time may be valuable. Laboratory tests also may be valuable. When the fall of blood pressure does come, it may be extremely sudden and severe.

Decompensated Secondary Shock.—The third clinical phase is decompensated secondary shock. The outstanding physical sign is the low blood pressure. There is a fall in both systolic and diastolic pressure with a reduction in the pulse pressure. Pulse rate is increased to 100 to 200 beats per minute. However, in older patients it may be slower. The diastolic pressure may be so low that it cannot be determined. The state of the peripheral circulation can be estimated by compressing the nail bed of a finger or a toe. Normally the color returns almost immediately, whereas in shock it may be delayed five or more seconds. A good return of blood after this compression test in presence of low pressure indicates a better prognosis than a slow return.

In this stage the skin is pale, cold and moist. There may be cyanosis of lips, fingers and toenails, sweat on the face and shallow breathing. Cheyne-Stokes breathing is a bad sign.

With the repeated appearance of shock following apparent periods of recovery due to the administration of transfusions and other supportive measures, it becomes progressively more difficult to obtain a favorable response to treatment. In such a condition it is not uncommon for the patient to succumb.

Pseudoirreversible Shock.—Midway between decompensated shock and irreversible shock lies pseudoirreversible shock. The importance of recognizing its existence lies in the fact that the circulatory failure, which at first does not respond to transfusion, will eventually respond if a sufficient amount of blood is given. If several blood transfusions have been administered and the blood pressure still remains low, but the patient's skin is warm, there is a good return of circulation in the nail beds and the superficial veins are filled, a continuance of transfusions should be encouraged, even to the giving of several pints of blood.

Irreversible Shock.—The final stage of secondary shock is irreversible shock. This phase must be differentiated from pseudoirreversible shock, which is due to inadequate amounts of blood transfusions, and from continued internal bleeding. Davis [1] has stated that a diagnosis of irreversible shock should be made only after necropsy has shown neither an internal hemorrhage nor fluid loss.

In this phase of shock there are certain definite signs which may be present and may lead one to a possible poor prognosis; namely, continuous low blood pressure in spite of apparently adequate transfusions, greatly increased pulse rate, Cheyne-Stokes breathing, severe mental depression, continuous cold clammy skin and cyanotic nail beds.

Shock is particularly dangerous when it affects patients in the extremes of youth or age.

FAILURE OF CIRCULATION DURING ANESTHESIA

The effects of anesthetic agents on the circulation are of much interest to both surgeons and anesthesiologists. Because there are three factors to be considered, effect of the anesthesia, effect of the operation and general condition of the patient, an opportunity provides itself for careful observation and evaluation of the patient and treatment selected.

In most patients who die while under the effects of anesthesia the cause of death is either failure of circulation or failure of the respiratory mechanism. The causes of these deaths usually fall into one of five categories: (1) obstruction of airways, (2) carotid sinus reflexes, (3) method of administration of procedure, for example, long-continued positive pressure breathing, (4) direct effect of anesthesia on respiratory mechanism and (5) direct effect of anesthesia on the circulatory system.

Anoxia or hypoxia during anesthesia is accepted as a factor in considering circulatory failure.

SUPPORTIVE TREATMENT

The supportive treatment of any patient undergoing a surgical procedure should be an attempt to keep a parity between the circulating blood volume and the circulatory bed in which the blood flows. The underlying principle of supportive treatment is to prevent a disparity developing between these two. If a disparity has developed, it should be recognized as early as possible and treatment should be started immediately.

The first treatment of shock should be done as a prophylactic measure. The gentleness of handling tissues and the prevention of loss of blood and plasma are primarily the surgeon's effort.

As for the anesthesiologist, impending circulatory embarrassment may be materially allayed, prevented or stopped, and the patient's general condition may be improved, by the addition of certain replacement fluids, such as solution of gelatin, blood and plasma. Along with removal of the cause and other contributing factors, the early, rapid and adequate administration of these aforementioned products is the necessary treatment for secondary shock.

These supportive and allied measures often do much to eliminate or dismiss the contributing factors.

GENERAL MEASURES

Position.—The raising of the foot of the bed or the lowering of the head is a commonly prescribed treatment of shock. This maneuver is an attempt to increase the flow of blood to the heart and other vital centers. The real effectiveness of this foot-up position is open to question, and it may even cause some real discomfort and actual harm to the patient. It may be that this position decreases the thoracic space and increases intrathoracic pressure; this in turn decreases the oxygenation of blood by decreasing the depth of breathing. This position, however, is practical and useful for primary or neurogenic shock.

Compression Bandages.—It is a rather common practice today to bind burned areas to prevent loss of plasma. As White and Weinstein [8] have mentioned, numerous experiments in traumatic and burn shock have shown that this binding procedure lessens loss of plasma and reduces the tendency for shock to develop.

8. White, C. S., and Weinstein, J. J.: Blood Derivatives and Substitutes; Preparation, Storage, Administration and Clinical Results Including a Discussion of Shock, Etiology, Physiology, Pathology and Management, Baltimore, Williams & Wilkins Company, 1947.

It is believed that compression bandages decrease the venous pooling, improve muscle tone and help increase the peripheral resistance.

Heat and Cold.—Wakim and Gatch [9] have reported that "cold and heat proved to be deleterious to the life of animals in shock. An external temperature in the neighborhood of that of the mammalian body seems to be optimal for the survival of shocked animals." The most recent practice is to avoid applying excessive heat or cold but to maintain a normal room temperature.

Rest, Quiet and Assurance.—Pain-relieving drugs are appropriate if pain is one of the agents precipitating a disturbance of the circulatory blood volume. Morphine is contraindicated if the patient has an intracranial injury or a ruptured abdominal organ. A thorough investigation of the patient, producing no contraindication, should be made before morphine is given. The seriousness of overdosing with morphine in secondary shock is real. Small doses of barbiturates given orally or intramuscularly might be more appropriate. Gentle, orderly and quiet treatment of the patient is essential. No conversation should be allowed that imparts fear or foreboding to the patient.

Vasospastic Drugs.—Vasoconstriction is present as a compensatory mechanism in secondary shock. Freeman [10] has produced shock in animals with large doses of epinephrine. In the treatment of neurogenic shock vasospastic drugs are helpful. In the early stages of secondary shock, before diffuse physiologic changes occur, the vasoconstrictor drugs may raise the blood pressure above a critical level and thus aid in a more rapid recovery.

Oxygen.—Because of a defective circulation the chances of producing an anoxic state are increased. The circulation being slowed, cells are stagnant, the available oxygen is more largely used up; hence, stagnant anoxia plays a part in perpetuating the pathologic physiology of shock and produces a greater permeability and a further disparity in the circulation. By the administration of oxygen the anoxic state may be partially or completely eliminated, and any damaging effect in the cells may be reduced. From these observations it is seen that oxygen inhalations are in order if the circulation is failing. If oxygen is to be beneficial, it should be administered early.

Restoration of Blood Volume.—The restoration of blood volume is the most important single item in the treatment of impending or existent shock. All other treatments must be considered as aids to the ultimate recovery of the patient. The restoration of blood volume must be considered from various angles: (1) type of fluid to be used, (2) amount of fluid necessary and (3) ability to recognize a favorable response.

Types of Fluids.—There are various types of fluids that may be administered. One must consider and evaluate the patient's needs in order to decide which fluid is most applicable and from which fluid the patient is likely to receive the most lasting benefit.

There are three types of fluid to consider: (1) substitutes, such as isotonic solutions of sodium chloride or dextrose, or solutions of acacia, gelatin, pectin, dextran (6 per cent dilution of polydispersoid glucose polymer in isotonic sodium chloride solution), polyvinyl pyrrolidine, synthetic blood plasma (periston), amino acids and isinglass; (2) blood derivatives, such as blood plasma, blood serum, serum albumin and suspensions of erythrocytes, and (3) whole citrated blood.

Crystalloids.—Normally there is a balance between the fluid in the blood cells, the water in the blood and the tissue cells. The exchange of fluid from the blood to the extracellular space takes place through the capillary walls. There are several controlling factors; namely, the intravascular pressure, the osmotic pressure of the serum proteins, the tissue pressure and the blood volume.

The volume of blood varies with the fluids. Dehydration is a loss of body fluid, and severe dehydration can be a causative or contributing factor to shock.

The normal capillary endothelium is permeable to water, dextrose, sodium chloride and amino acids; in other words, to substances of a molecular diameter less than 28 angstrom units.

In shock the permeability of the capillaries is increased, producing a loss of fluid and protein, and thus a decrease in blood volume.

The addition of a crystalloid solution with molecules of a diameter less than 28 angstrom units will produce only a temporary rise in blood volume, and will later result in more loss of fluid and protein. Actually this may make the patient's condition worse. Crystalloid solutions should not be used in cases of advancing shock.

Shock following a rapid hemorrhage may be materially aided temporarily by crystalloids, provided adequate and proper treatment with blood or plasma follows. This rapid addition of a crystalloid solution may save a life. Crystalloid solutions should not be used to treat recurrent peripheral circulatory failure because of the possibility of washing out more fluid and protein.

After the adequate treatment of shock by blood or plasma, crystalloids may be used effectively to treat dehydration and to try to prevent its development. The use of crystalloids at this time also helps remove toxic substances by maintaining adequate renal function. The peripheral and systemic edema sometimes encountered as the result of the injudicious use of saline solutions in the face of protein deficiencies may be exceedingly disconcerting.

Blalock [11] has said: "Sufficient fluids should be administered to correct the dehydration, but larger quantities are apt to result in harm rather than benefit."

Neurogenic shock, with its vasodilatation and hypotension, usually is easily handled, but if it persists or more shock appears, a secondary shock phase may supervene. A dehydrated patient in whom neurogenic shock develops should be treated with crystalloids to try to improve the dehydration and prevent secondary shock.

Acidosis in shock is said to be due to a stagnant anoxia, and it may be corrected by increasing blood volume and circulation. In cases of vomiting and diarrhea, Ringer's solution, sixth-molar solution of sodium lactate, solution of sodium chloride and 5 per cent solution of dextrose in saline solution may be given to neutralize the acidosis.

The addition of 50 cc. of 50 per cent solution of dextrose tends to draw fluid from the tissues into the circulation. However, if the patient is already dehydrated, and this dehydration is playing a part in the

9. Wakim, K. G., and Gatch, W. D.: The Effect of External Temperature on Shock: An Experimental Study, J. A. M. A. **121**: 903-907 (March 20) 1943.

10. Freeman, N. E., cited by White and Weinstein.[8]

11. Blalock, A.: Principles of Surgical Care, Shock and Other Problems, St. Louis, C. V. Mosby Company, 1940.

circulatory failure, then the condition is being accentuated rather than improved.

It is difficult to make rules for the use of crystalloids. The problem is individual and must be decided for each case. Crystalloids are valuable in cases of dehydration for maintaining postshock fluid balance, to treat neurogenic shock and to keep the needle and vein open so that plasma or blood may be administered when necessary.

Solution of Acacia.—Solution of acacia was used first in 1906. Anaphylactic reactions to this agent have been reported.[12] It may remain within the reticuloendothelial system for months or years.

Solution of Gelatin.—The first use of solution of gelatin for this purpose was in 1915 by Hogan.[13] The present position of this solution in the treatment of shock is controversial. However, some workers are impressed with its possibilities.

Pectin.—Pectin is a colloidal carbohydrate of high molecular weight. The value of the solution of this preparation in the treatment of shock also is a controversial subject.

Pectin, gelatin and acacia may cause considerable pseudoagglutination of the erythrocytes.

Periston.—Periston has been shown to produce pathologic changes in the tissues.[14]

Dextran.—Dextran is being used by Dr. Lundy[15] of the Mayo Clinic, who is impressed with its possibilities.

Blood Derivatives.—The value of blood derivatives, such as plasma, serum, serum albumin and suspensions of erythrocytes, has been demonstrated sufficiently frequently that these fluids should be seriously considered. Laboratory and clinical study has proved the efficiency of human plasma for use in secondary shock. When shock is associated with direct trauma and crushing injuries plasma is the major element lost, whereas in cases of lacerations and soft tissue injuries, blood is the fluid lost.

It has been shown that the blood volume is decreased at least 20 per cent before clinical shock manifests itself. A systolic blood pressure of less than 85 mm. of mercury usually indicates a loss of blood volume of at least 25 per cent. The amount of plasma necessary varies with the degree of shock and the homeostatic response. Initial doses of plasma should be large. It is better to give "too much too early" than "too little too late." Usually 500 cc. or more should be given. If the initial dose of plasma is adequate, it will be shown clinically by a rise in the systolic pressure of 10 to 25 mm. of mercury. The earlier this treatment is administered, the better is the response. A cold, clammy skin will become warm and dry, and a dusky color will be replaced by a pink color. The veins become more prominent and fill more readily. The pulse rate, however, may take eight to twelve hours to return to a near normal level. It is my impression that careful repeated blood pressure readings are the simplest and most accurate diagnostic procedures for detection and estimation of secondary shock and for determining the response to treatment. One must always remember the possibility of a recurrence of the condition of shock.

12. Maytum, C. K., and Magath, T. B.: Sensitivity to Acacia, J. A. M. A. **99**: 2251-2252 (Dec. 31) 1932.
13. Hogan, J. J.: The Intravenous Use of Colloidal (Gelatin) Solutions in Shock, J. A. M. A. **64**: 721-726 (Feb. 27) 1915.
14. Korth, J., and Heinlein, H., cited by Davis,[1] p. 579.
15. Lundy, J. S.: Personal communication to the author.

Whole Citrated Blood.—Whole citrated blood is now recognized as the fluid without a rival for its excellence in treatment of patients with impending or existent circulatory disturbances, particularly in the presence of visible or invisible hemorrhages. In these cases plasma is not the ideal fluid to compensate for loss of whole blood. When blood loss is the major cause of the disturbance in circulation compatible whole blood should be administered. However, this whole blood is not always readily available, and plasma will suffice to keep the patient alive. It is not the loss of erythrocytes that causes death but the loss of blood volume.

When laboratory animals are submitted to successive hemorrhages, only partial restoration with serum or blood does not save all animals but replacement of volume for volume lost saves all animals.

Amount of Fluid Necessary for Replacement.—The purpose in the restoration of the blood volume is to return the physiologic processes to a near normal level. The amount of fluid necessary to attain this goal depends on the response of the patient.[16]

It is now generally realized that large amounts of blood must often be given to restore a patient with an impending or existent shock syndrome. To gage the amount of fluid or blood to be administered, one must depend a great deal on the observation of the patient's response to the treatment. Failure to respond is frequently the result of inadequate administration of blood or blood plasma. The rate of administration of the fluid is dependent on the necessity for help to the patient. A good response is signified by a return of the blood pressure to a normal range, a slowing of the pulse rate, an increase in the blood volume, a decrease of peripheral vasoconstriction and a return to a normal cardiac output. The circulation time and oxygen transportation must be improved.

There are other clinical evidences of a good response: the patient becomes more alert, the skin is warm, the output of urine is improved, and the radial pulse is of much better quality.

There are various causes for the poor response occasionally encountered. Not the least of these is the inadequate amount of the right type of fluid to restore the blood volume. This in large part is the result of the poor, improper or inadequate observation and treatment of the patient.

ABSTRACT OF DISCUSSION

DR. DONALD E. HALE, Cleveland: In Dr. Seldon's efforts in supportive therapy all the procedures are aimed directly or indirectly at preserving the oxygen flow and delivering oxygen to the individual cells of the body. Lowering the head allows blood to flow more readily to the heart, and thence to the brain; compression bandages prevent pooling; vasoconstrictors allow the vessels to adapt themselves to the blood volume; oxygen is given to compensate for those factors which diminish the distribution and the utilization of blood, and the maintenance or restoration of blood volume helps keep the transport system functioning. It was somewhat disquieting to learn recently that cyanosis cannot be detected by the naked eye and to discover that the anesthetist in certain quarters is being removed farther and farther from the patient by wires, gages, dials, tubes and other impedimenta which make up the electronic instruments of precision which inform the anesthetist of his patient's condition. In the midst of this, Dr. Seldon's paper is heartening.

16. Emerson, C. P., and Ebert, R. V.: A Study of Shock in Battle Casualties: Measurements of the Blood Volume Changes Occurring in Response to Therapy, Ann. Surg. **122**: 745-772 (Nov.) 1945. Morrison, A. E., Jr.: Personal communication to the author.

Dr. Earl F. Weir, Dallas, Texas: Some feel that if blood is being administered during an operation the surgeon will be thought of as a hemorrhagic and traumatic practitioner; he may maintain his resolution not to administer blood to the patient even though the disparity between circulating volume and capillary bed has reached the point where the circulation is of such a stagnant type that Saklad's grade 4 hypoxia is in evidence. It is impossible even with the best anesthetic equipment to "blow oxygen through an empty arteriovenous system." Many surgeons when finally converted to administration of blood during operation are surprised to note the definite decline not only in their mortality rate but in their morbidity statistics. One frequently encounters the matter of economics in the private patient institution or clinic. If human life is no longer worth the fee connected with the service of typing and cross-matching or even buying a pint of blood, then it has become too cheap and all other cost involved in maintaining it must also be out of the realm of sound economy. A campaign to enlighten the public in this field is as necessary as the education of the public in the matter of early diagnosis and treatment of many surgical conditions. Many persons still believe that if blood, plasma or plasma substitutes were used during a surgical operation either the surgeon or the anesthetist, or both, encountered difficulties. The treatment in the past of a patient graded as a "poor risk" by McKesson's method was the administration of isotonic sodium chloride solution intravenously. At least the recognition of disparity between circulating volume and bed were a due cause for alarm. No mention is made of the concurrent incidence of pulmonary edema or manifestation of Muirhead's "lower nephron nephrosis." At least shock was recognized, and an attempt was being made at treatment. Now twenty-five years later one of the greatest advances in the fields of surgery and anesthesia is being discussed—supportive therapy and not restorative therapy. In several instances of severe hemorrhage, both recognizable and hidden, I observed good results with the intra-arterial administration of blood as it was originally described by Robertson, Trincher and Dennis in *Surgery, Gynecology and Obstetrics*, December 1948.

Dr. P. D. Woodbridge, Reading, Pa.: There probably is a great deal of confusion due to varying definitions of the word shock. Dr. Virgil Moon has considered it to be a condition in which there is hemoconcentration and increased capillary permeability. I wish to ask Dr. Seldon whether he had information concerning hemoconcentration or hemodilution in the cases on which he based his presentation. Dr. Moon maintains that in cases of shock the administration of plasma is the best treatment. Dr. Seldon has advocated the use of blood. In circulatory collapse with hemoconcentration, as from severe hemorrhage, all undoubtedly agree that transfusion of whole blood is the best treatment. But according to Moon's definition, this condition is not shock. In the so-called irreversible shock mentioned by Dr. Seldon it would be valuable to know the hematocrit value. If there is decided hemoconcentration the administration of blood may contribute to the death of the patient rather than to his recovery.

Dr. P. A. Lief, Denver: Experiences during World War II at forward field hospitals, where blood banks were not available, proved that plasma could not supplant whole blood in conditions of modern warfare. Although surgeons used ample quantities of Red Cross plasma, in desperation they bled their medical corpsmen. The not uncommon condition of dehydration in soldiers during combat frequently presented a peripheral blood picture of hemoconcentration in casualties who were in hemorrhagic or traumatic shock before surgical intervention began. Dr. Francis D. Moore of the Peter Bent Brigham Hospital recently presented a paper on "Current Trends in the Care of Depleted Surgical Patients" at Worcester, Mass. He demonstrated that the red blood corpuscles of whole blood when given intravenously will tend to remain within the circulatory blood bed rather than migrate to the extravascular spaces. This concept of increasing the circulatory blood volume by the actual space occupied by the transfused red blood corpuscles should be considered in replacement therapy during anesthesia and operation. Fluids should be administered to the patient only after a careful assessment of his state of hydration. Hemoconcentration should not be the sole factor in determining the amount of blood that should be administered during operation.

Dr. Thomas H. Seldon, Rochester, Minn.: Dr. Woodbridge asked if I had any data relative to hemoconcentration. My reply is "no." Clinical observation of the patient's condition is relied on to determine the procedure for treatment. I appreciate Dr. Lief's comments relative to the administration of whole blood, which I believe to be the fluid of choice in most instances.

ROENTGEN MANIFESTATIONS OF SMALL INTESTINAL BLEEDING

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The small intestine is host to many lesions that bleed. It must always be thought of, therefore, in patients with melena. We propose herein to review the causes for such bleeding, placing particular emphasis on their roentgen manifestations.

In preparing this report we reviewed the records of 161 patients with proved lesions of the small bowel who were admitted to the University Hospital from 1940 to 1948. In addition we consulted the literature, the Registry of Radiologic Pathology of the Army Institute of Pathology and other radiologists.

Among the causes for small intestinal bleeding one may list:

1. Anomalies
   - *a.* Meckel's diverticulum
   - *b.* Nonmeckelian diverticulum
   - *c.* Intestinal duplication
2. Primary ulcers
   - *a.* Postbulbar doudenal
   - *b.* Jejunal and ileal
3. Enteritis
   - *a.* Nontuberculous infections
   - *b.* Tuberculous enteritis
   - *c.* Sarcoid
   - *d.* Intestinal lipodystrophy
4. Benign tumors
   - *a.* Myoma
   - *b.* Leiomyoma
   - *c.* Adenoma
   - *d.* Vascular malformations
   - *e.* Lipoma
   - *f.* Fibroma
   - *g.* Neurofibroma
   - *h.* Fibroid adenoma
   - *i.* Osteochondroma
   - *j.* Angiofibroma
5. Malignant tumors
   - *a.* Lymphosarcoma
   - *b.* Adenocarcinoma
   - *c.* Leiomyosarcoma
   - *d.* Argentaffinoma
   - *e.* Metastases
6. Miscellaneous conditions
   - *a.* Vascular diseases
   - *b.* Allergy
   - *c.* Gallbladder disease and pylethrombosis
   - *d.* Azotemia
   - *e.* Foreign bodies
   - *f.* Drugs
   - *g.* Purpura
   - *h.* Blood dyscrasias

Although some of the maladies included in "miscellaneous conditions" lie beyond the field of roentgen diagnosis, they are mentioned to alert radiologists to the role of these conditions in the problem of small intestinal hemorrhage.

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This article has been abbreviated in The Journal by omission of the footnotes. The complete article will appear in the author's reprints.

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PRINCIPAL CAUSES OF SMALL INTESTINAL HEMORRHAGE

1. *Anomalies.*—Meckel's Diverticulum: (*a*) Eleven patients with Meckel's diverticulum were operated on in the University Hospital during the period 1940 to 1948. Of this group only 1 bled. Meckel's diverticulum is responsible for many serious and unrecognized abdominal complications. As a rule, it is located on the antimesenteric border of the ileum 30 to 90 cm. above the ileocecal valve.[1] It is twice as common in males as in females and occurs in about 2 per cent of the population.[2]

The common occurrence of heterotopic gastric, pancreatic, duodenal, colonic and unrecognizable tissue within the diverticulum is its most interesting feature and is estimated as being present in one fourth of the cases.[3] It is not surprising, therefore, to find Meckel's diverticulum associated with ulcer,[4] regional enteritis,[5] perforation,[1] acute and chronic infections,[3b] obstructions and tumors.[3a]

Hemorrhage is one of the most common symptoms of diverticulum. It occurs more often in persons under 15 years of age and especially in infants under 2 years.[6] The bleeding is attributable to the ulcer, erosion and inflammation that develop in the heterotopic tissue within the diverticulum. Usually the ulcer may be found at the junction of the heterotopic mucosa and the normal mucosa.[3a]

The roentgen manifestations of Meckel's diverticulum are common knowledge. The presence of a barium or air-filled sac which may vary in size from a few millimeters to many centimeters in diameter arising from any part of the ileum is enough to make the diagnosis. However, many diverticula escape detection even by the most expert diagnosticians. The fact that they may be seeen one day and not another adds to the difficulties of the examination. A high index of suspicion, well accommodated eyes, excellent radiographs, with and without compression, and a large element of good fortune are all necessary to make the diagnosis. Not infrequently the diverticulum will be missed entirely during the course of the small bowel study only to be picked up in the six or twenty-four hour films. In rare instances the neck of the diverticulum may be sealed off, leaving behind a closed sac which makes its presence known by extrinsic pressure on the intestine. There is 1 case in the literature in which the diverticulum contained calcific debris seen radiographically.[4a] A giant Meckel's diverticulum which was associated with a retroperitoneal hernia diagnosed preoperatively has also been reported in the literature.[7]

(*b*) Nonmeckelian Diverticulum: There were 7 patients with nonmeckelinian diverticulum operated on in the University Hospital during the period 1940 to 1948. Of this group, 1 bled. Nonmeckelian diverticulum is found most often in the second portion of the duodenum, less commonly in the jejunum and least commonly in the ileum.[8] Usually found penetrating the muscular layers of the intestine at points where blood vessels enter, it often contains ectopic pancreatic tissue. It is host to all the complications found in Meckel's diverticulum and bleeds with equal severity. Guthrie and Hughes[9] reported 5 patients who bled, and Klidjian's[10] patients had 8 such diverticula removed from the jejunum because of hemorrhage.

(*c*) Intestinal Duplication: There was 1 patient with a small intestinal duplication operated on for violent bleeding in the University Hospital during the period 1940 to 1948. According to Bremer,[11] the enterogenous cysts and intestinal duplications fall into two categories. The first includes the spheric cysts, which arise from true diverticula lying either within or without the intestinal wall. The second type is much more complicated.

During the sixth and seventh weeks of fetal life the intestinal tract grows rapidly in length. This is usually preceded by an increase in its epithelial cells of such a degree that the lumen of the fetal gut may become occluded. With time this solid appearance becomes vacuolated and tubular, to form the lumen of the adult intestine. It is the interruption of orderly and complete vacuolization of this solid stage that results in intestinal duplications.

In its simplest form the intestinal duplication is hollow, possesses its own muscular layers and lies in intimate contact with the main portion of the intestine. It is seldom more than 12 inches (30 cm.) long, and it is attached to the intestine by fused muscular layers suggesting a double-barreled shotgun. A longer reduplication sometimes lies free of the main intestinal segment, with which it maintains contact at one end. Least common of all is the duplication that lies entirely free of the parent intestine except for the connections at each of its ends.

In 1940 Ladd and Gross[12] reported 18 such anomalies. They were found along the course of the entire alimentary canal from tongue to anus and varied considerably in size. The symptoms depended on the site of origin of the duplication.[12] In the esophagus it caused dysphasia and dyspnea; in the stomach, sensation of fullness and pain. Further down the intestinal tract obstruction was noted. In the terminal ileum severe painless hemorrhage was found, which Ladd and Gross attributed to poor circulation, ulceration and sloughing.

There are no characteristic roentgen manifestations of intestinal duplication. Any mass that lies intimately connected with the alimentary tract may, with justice, be considered an enterogenous cyst. We have seen 4 such anomalies in the chest and 4 connected with the colon in which the diagnosis was suggested by the radiologist because of his index of suspicion rather than pathognomonic roentgen observations.

1. Servetnick, A., and Nichols, H. G.: Hemorrhage from Meckel's Diverticulum in an Adult: Case Report, New England J. Med. **228:** 12, 1943.

2. Pfahler, G. E.: The Roentgenological Diagnosis of Meckel's Diverticula, Surg., Gynec. & Obst. **59:** 929, 1934.

3. (*a*) Haber, J. J.: Meckel's Diverticulum: Review of Literature and Analytical Study of Twenty-Three Cases with Particular Emphasis on Bowel Obstruction, Am. J. Surg. **73:** 468, 1947. (*b*) Hallendorf, L. C., and Lovelace, W. R.: Aberrant Gastric Mucosa and Pancreatic Tissue in Bleeding Meckel's Diverticulum: Report of Case, Proc. Staff Meet., Mayo Clin. **22:** 53, 1947. (*c*) Servetnick and Nichols.[1]

4. (*a*) Gile, J. F., and MacCarthy, W. C., Jr.: Calcified Concretions within Meckel's Diverticulum, Radiology **41:** 491, 1943. (*b*) Jackson, A. S.: Ulcer of Meckel's Diverticulum As a Cause of Intestinal Hemorrhage, Ann. Surg. **85:** 252, 1927.

5. (*a*) Horn, R. C., and Rhoads, J. E.: Regional Enteritis Involving Meckel's Diverticulum, Ann. Surg. **119:** 274, 1944. (*b*) Kiefer, E. D.: Small Intestine: Review of Recent Literature, Gastroenterology, **5:** 259, 1945.

6. Penberthy, G. C., and Benson, C. D.: The Complications of Meckel's Diverticula in Infants and Children, S. Clin. North America **28:** 1221, 1948.

7. Raydin, I. S., and Hodes, P. J.: Retroperitoneal (Mesenteric Pouch) Hernia (Containing Giant Meckel's Diverticula: Case) Ann. Surg. **123:** 106, 1946.

8. Benson, R. E.; Dixon, C. F., and Waugh, J. M.: Nonmeckelian Diverticula of Jejunum and Ileum, Ann. Surg. **118:** 377, 1943.

9. Guthrie, D., and Hughes, F. A.: Diverticulosis of the Small Intestine, Surgery **1:** 595, 1937.

10. Klidjian, A.: Jejunum Diverticulosis Complicated by Hemorrhage, Brit. M. J. **1:** 683, 1946.

11. Bremer, J. L.: Diverticula and Duplications of Intestinal Tract, Arch. Path. **38:** 132 (Sept.) 1944.

12. Ladd, W. E., and Gross, R. E.: Surgical Treatment of Duplications of the Alimentary Tract, Surg., Gynec. & Obst. **70:** 295, 1940.

2. *Primary Ulcers.*—(*a*) Duodenal (Postbulbar): Postbulbar duodenal ulcer is far more common than primary ulcer in the jejunum and ileum. The surgical files of the University Hospital contain but 1 proved case of primary jejunal ulcer, yet there were many of postbulbar duodenal ulcer. According to the literature the incidence of postbulbar ulcer varies remarkably, from 5 to 20 per cent. There are excellent current reports dealing with the subject published by Alvarez and Farinas [13] and more recently by Ball, Segal and Golden.[14] Whereas Alvarez and Farinas emphasized the ulcer niche in this lesion, Ball, Segal and Golden stressed more the presence in the descending limb of the duodenum of a smooth, round and narrow indentation that usually lay opposite to and at the level of the ulcer.

It seems fair to state that many postbulbar duodenal ulcers do not present the aforementioned changes. Often nothing is seen, and sometimes a bizarre coin-like collection of barium is all that can be observed.

Of added interest is the speed with which some of these ulcers heal. It is by no means rare for surgeons to experience great difficulty in demonstrating the ulcer at operation although an obvious ulcer crater was seen radiographically a few days previously. Only after considerable searching will some of these ulcers be found at operation, and when viewed critically this decided tendency to heal will be noticed. Obviously this is not the case in the more chronic ulcers that penetrate the muscularis propria or the pancreas.

The importance of these postbulbar ulcers cannot be overemphasized. They often bleed, and because they overlie the pancreaticoduodenal artery they bleed violently.

(*b*) Jejunal and Ileal: Primary jejunal and ileal ulcers are rare. The 1 patient operated on in the University Hospital for such a lesion was reported by Ebeling [15] in 1933, and none have since been seen. Ebeling's patient was of particular interest because of the history of melena and the small intestinal stasis seen radiographically. It is noteworthy that the diagnosis was suggested by Dr. E. P. Pendergrass preoperatively.

Clinically these ulcers may mimic peptic ulcers higher in the alimentary canal. Intermittent ulcer-like pain with food ease, cramps, distention and vomiting have all been observed and recorded.[16]

As a rule primary ulcers of the small bowel are located opposite the mesenteric border of the intestine. They vary in diameter from a few millimeters to 2 cm. and may look exactly like the common gastric or duodenal ulcerations.

Nothing is known of their roentgen manifestations except their tendency to interfere with the normal transit of barium through the small bowel. Ebeling's patient [15] revealed decided stasis with incomplete obstruction and jejunal distention above the ulcer.

3. *Enteritis.*—(*a*) Nontuberculous Infections: Over 300 patients with nontuberculous enteritis have been studied and treated in the University Hospital. Of these, the records of 75 recent patients were reviewed for this report. Among the latter there were 15 in whom severe bleeding occurred. Like Golden [17] we include regional enteritis and nonsclerosing ileitis in this group.

Regional enteritis is characterized by a nonspecific sclerosing inflammatory process that involves the terminal ileum, ileocecal region or any portion of the small intestine.[18] It often is associated with a narrow lumen, hypertrophy of the muscularis propria, mucosal erosions or ulcerations and fistulas. Radiographically it is recognized by pronounced abnormalities in the small intestine which include irritability, narrowing and even stenosis of the intestinal lumen, distortion or absence of the normal mucosal pattern, fixation and rigidity of one or more segments of the bowel, fistulas and palpable masses.

The nonsclerosing affection occurs more commonly in girls early in life. Pain in the lower right portion of the abdomen, often mistaken for appendicitis, is the outstanding symptom. Radiographically, the nonsclerosing ileitis is recognized by small polypoid elevations in the mucosa of the terminal ileum (cobblestone ileum), where tenderness usually is elicited and irritability may or may not be present.

(*b*) Tuberculous Enteritis: Eight patients operated on for tuberculous enteritis were included in this series. Of this group, melena was noted in 3. The fact that tuberculous enteritis almost invariably is found in patients with pulmonary tuberculosis is common knowledge. That the condition occurs in the acute ulcerative or hyperplastic forms is also well known. It usually involves the terminal ileum or ileum and cecum, and its roentgen manifestations mimic those found in nontuberculous enteritis.

(*c*) Sarcoid: Less well known are the observations in intestinal sarcoid recently reported by Watson, Rigler, Wangensteen and McCartney,[19] who found considerable similarity between it and regional enteritis. It was their opinion that sarcoid involved longer segments of the intestine than did regional ileitis (Crohn's disease [18]). They also believed that the diagnosis could not be justified in the absence of other sarcoid lesions in the skin, chest or bones. The authors commented on the less common occurrence of peritonitis, fistulas and lower abdominal masses in sarcoid than in regional enteritis. They described in detail the roentgen manifestations in a patient proved to have intestinal sarcoid who had been studied by the routine barium sulfate meal taken through the mouth and by the Miller-Abbott tube. The mucosal changes they observed looked much like the mucosal pattern of diffuse chronic ulcerative colitis with its hyperplastic and polypoid mucous membrane.

(*d*) Intestinal Lipodystrophy: Intestinal lipodystrophy was first described by Whipple in 1907. The disease is characterized anatomically by the presence of large deposits of fat and fatty acids in the lymphatic tissues of the intestine and mesentery. Because it is obviously due to some failure in the preparation or absorption of fats, the disease pathologically is different from sprue. In 1943 Apperly and Copley [20] reviewed

13. Alvarez, L. F., and Farinas, P. L.: Post Bulbar Duodenal Ulcers, Gastroenterology **8**: 1, 1947.
14. Ball, R. P.; Segal, A. L., and Golden, R.: Post Bulbar Ulcers of the Duodenum, Am. J. Roentgenol. **59**: 90, 1948.
15. Ebeling, W. W.: Primary Jejunal Ulcer, Ann. Surg. **97**: 857, 1933.
16. Berry, L. H., and Dailey, U. G.: Primary Ulcer of the Jejunum, Am. J. Digest. Dis. **7**: 63, 1940. Brown, P. W., and Pemberton, J. de J.: Solitary Ulcer of the Ileum and Ulcer of Meckel's Diverticulum, Ann. Int. Med. **9**: 1684, 1936.
17. Golden, R.: Radiologic Examination of the Small Intestine, Philadelphia, J. B. Lippincott Company, 1945.
18. Crohn, B. B.: Benign Diseases of the Small Intestine, Gastroenterology **2**: 385, 1944. Johnson, W. R.: Chronic Nonspecific Jejunitis with Unusual Features, ibid. **1**:347, 1943. Sussman, M. D., and Wachtel, E.: Granulomatous Jejunoileitis, Radiology **39**: 48, 1942.
19. Watson, C. J.; Rigler, L. G.; Wangensteen, O. H., and McCartney, J. S.: Isolated Sarcoidosis of the Small Intestine Simulating Non-Specific Ileo-Jejunitis, Gastroenterology **4**: 30, 1945.
20. Apperly, F. L., and Copley, E. L.: Whipple's Disease (Lipophagia Granulomatosia) Gastroenterology **1**: 461, 1943.

the entire subject. They found that the majority of patients were men between 40 and 60 years of age. Postprandial discomfort, gaseous distention and polyarthritis followed by steatorrhea, often bloody, and severe wasting constituted the more common clinical observations. Of considerable interest was the fact that these patients were reported as having no gastrointestinal abnormalities that could be detected by roentgen methods.

4. *Benign Tumors.*—There were 11 patients with benign small intestinal tumors operated on in the University Hospital during the period 1940 to 1948. Of this group none bled. Lichtenstein and Dutra,[21] reviewing 116 benign tumors of the small bowel, reported that they occurred most often in the ileum and less commonly in the duodenum and jejunum. Bockus [22] found that they occurred infrequently in the jejunum and were of equal incidence in the duodenum and ileum. Localization of these neoplasms, therefore, would seem to be of little importance in their recognition.[23]

Of the benign tumors in the small bowel the myomas, leiomyomas and adenomas [24] (polyps and papillomas) are the most common. Less common are the lipomas, fibromas, neurofibromas, fibroid adenomas, osteochondromas and angiofibromas.

(*a*) Myoma and (*b*) Leiomyoma: It was Smith [25] who popularized the old concept that small intestinal myomas and leiomyomas could be divided into "inner" and "outer" growths, depending on whether they extended within or without the bowel. He believed that "inner" tumors often produced partial obstruction or ulcer-like pain and were seldom asymptomatic. He also reported that they hardly ever exceeded 4 cm. in diameter and that the "outer" growths were often much larger.

Smith found only 3 deaths from intraluminal myomas in the twenty-five year period he reviewed. The extraluminal myomas, however, caused death much more frequently. Of 22 patients with "outer" growths, 16 died of hemorrhages attributable to focal hemorrhagic necrosis within the tumor.

(*c*) Adenoma: Adenomas occur as single or multiple lesions.[26] They are found most often in the ileum and less so in the duodenum and jejunum; they seldom caused serious bleeding. Included in this group were papillomas and polyps, which often remained unrecognized until autopsy although Dickson [24] reported a young woman with an eleven year history of pain, vomiting and intussusception.

(*e*) Lipoma: The lipomas constitute an interesting group of intestinal growths, usually submucosal and pedunculated. They often initiated intussusception.[27] Although their overlying mucosa frequently remained intact, there were some in which it eroded and bled. Approximately 85 per cent of lipomas occurred as intraluminal growths.

(*f*) Fibroma, (*h*) Fibroid Adenoma and (*i*) Osteochondroma: Nothing distinctive was observed in fibromas except their rare association with intussusception.[27a] Nor were the fibroid adenomas or osteochondromas unusual.

(*g*) Neurofibroma: Intestinal neurofibromas were recently reviewed by Collins.[28] He found that one third of them tend to become malignant. He noted hemorrhage in 4 of 18 patients with such tumors, and he commented on the fact that bleeding was far more common in the benign neurofibromas than in their malignant form. Hamilton and Kennedy,[29] reporting a jejunal neurogenic sarcoma associated with Von Recklinghausen's disease (neurofibromatosis), recorded severe exsanguinating hemorrhage as its first and only symptom.

(*d*) Vascular Malformations: Vascular malformations and vascular tumors of the intestinal tract were rare.[30] In a recent review of 1,400,000 records from the Mayo Clinic only 106 such vascular tumors were found.[31] These were classified into the benign and malignant groups. Included in the benign group were the telangiectases and various hemangiomas (capillary, cavernous and mixed). In the malignant group were included benign hemangioendothelioma, metastasizing hemangioma, Kaposi's sarcoma (multiple idiopathic hemorrhagic sarcoma) and angiosarcoma.

The benign vascular tumors were far more common than the malignant. More than two thirds of the benign tumors occurred in males, whereas the malignant tumors were about equally divided between the sexes. Mucosal ulceration and bleeding were common, and exsanguinating hemorrhage was not rare. These lesions often caused partial or complete intestinal obstruction.

According to Bockus [22] vascular tumors are found more commonly in the jejunum and ileum than in the duodenum. Their tendency to occur as multiple lesions in almost one third of the cases is noteworthy.

The roentgen manifestations of these vascular malformations are not well known because so few have been thus examined. A recent complete review of the subject [31] mentions only the possibility of the presence of phleboliths as a roentgen observation. Drs. Barton Young and Robert Newell made it possible for us to review roentgenograms of 2 proved vascular malformations.

Dr. Barton Young's patient had massive intestinal bleeding for six weeks prior to admission. The small bowel study revealed intestinal stasis and an infiltrating lesion in the ileum. At operation a hemangioma was found in the mesentery that infiltrated the ileum and eroded its mucosa.

Dr. Robert Newell's patient (operated on by Dr. L. R. Chandler) was a boy aged 4 years who bled from the bowel repeatedly since the age of 8 months. A constricting lesion was found in the terminal ileum, which radiographically appeared to be studded with

21. Lichtenstein, M. E., and Dutra, F. R.: Angiofibroma of Ileum: Clinical Picture in Tumors of Small Intestines, Arch. Surg. **47**: 69, (July) 1943.

22. Bockus, H. L.: Gastro-Enterology, Philadelphia, W. B. Saunders Company, 1946.

23. Smith, L. A.; Good, C. A., and Gray, H. K.: Tumor of Small Intestine as Cause of Recurrent Melena: A Report of Two Cases, Proc. Staff Meet., Mayo Clin. **19**: 117, 1944.

24. Dickson, W. B.: Multiple Adenomas of Jejunum: Case Report, Ann. Surg. **119**: 283, 1944.

25. Smith, O. N.: Leiomyoma of Small Intestine, Am. J. M. Sc. **194**: 700, 1937.

26. (*a*) Cole, F.; Baronofsky, I. D., and Waugensteen, O. H.: Curare and Shock: Production of Hemorrhage into Upper Intestine of Dogs with Large Doses of Curare, Surgery **21**: 881, 1947. (*b*) Bockus.[22] Dickson.[24]

27. (*a*) Botsford, T. W., and Seibel, R. E.: Benign and Malignant Tumors of Small Intestine, New England J. Med. **236**: 683, 1947. (*b*) Schottenfeld, L. E.: Lipomas of Gastrointestinal Tract with Special Reference to Small Intestines Including Ileum: Review of Literature and Report of Six Cases, Surgery **14**: 47, 1943.

28. Collins, J. D.: Symposium on Abdominal Surgery: Neurofibroma of Small Intestine; Report of Case, Ann. Surg. **119**: 362, 1944.

29. Hamilton, J. B.; Kennedy, P. C., and Herault, P. C.: Neurogenic Sarcoma of Jejunum Associated with Von Recklinghausen's Disease, Ann. Surg. **119**: 856, 1944.

30. (*a*) Browne, D. C., and McHardy, G.: Solitary Sclerosing Hemangioma of Jejunum: Case Report, Gastroenterology **8**: 665, 1947. Christopher, F.: Hemangioma of Ileum, Ann. Surg. **116**: 945, 1942. Lushlan, S. D.: Gastro-Intestinal Bleeding in Hereditary Hemorrhagic Telangiectasia, Gastroenterology **7**: 199, 1946. Packard, G. B.: Hemangioma of the Intestine, Am. J. Surg. **67**: 558, 1945. Pierose, P. N.: Hemangioma of the Gastro-Intestinal Tract, J. A. M. A. **115**: 209 (July 20) 1940. (*b*) Stone, H. B.: Large Melana of Obscure Origin, Ann. Surg. **120**: 582, 1944. (*c*) Kiefer.[5b]

31. Gentry, R. W.; Dockerty, M. B., and Clagett, O. T.: Vascular Malformations and Vascular Tumors of the Gastrointestinal Tract, Surg., Gynec. & Obst. **88**: 281, 1949.

grapelike small polypoid filling defects that proved to be due to a large cavernous hemangioma involving 9 inches (23 cm.) of the wall of the ileum.

5. *Malignant Tumors.*—There were 16 patients with malignant small intestinal lesions operated on in the University Hospital. Of this group there were 7 who bled.

(*a*) Lymphosarcoma: The location of preference for lymphosarcoma is the terminal ileum possibly because of its abundant lymphoid structure. Yet these lesions are not uncommon higher in the small bowel involving the duodenum and proximal jejunum.[32]

Commonly lymphosarcoma invades the submucosa and muscularis forming subserosal tumors which cause chronic peritonitis and adhesions. Grossly the lesions either remain localized polypoid masses extending into the bowel, which it may partially occlude, or they may spread longitudinally, causing diffuse thickening of the bowel wall with or without central necrosis. Thus, aneurysmal dilatations of the small intestine are often found in lymphosarcoma as well as stenotic lesions.

We have seen 1 patient with a reticulum cell sarcoma of the small intestine who bled seriously. The observations radiographically suggested a severe regional enteritis superimposed on lymphosarcoma with aneurysmal dilatations of the intestine, fistulas and mucosal destruction.[33]

(*b*) Adenocarcinoma: Of the epithelial malignant tumors the adenocarcinomas are the most common. Their favorite site is the second portion of the duodenum and next most frequent the lower end of the ileum.[34] They vary in physical character from annular constricting lesions to infiltrating ulcers of polypoid growths.[35] One of 5 bleed.[36]

Though less common than the duodenal and ileal lesions, jejunal carcinomas occur often enough to be seriously considered in any jejunal problem in which there is obstruction and bleeding.[37] Adenocarcinomas usually are annular and constricting, and their prognosis is unfavorable.[37b]

(*c*) Leiomyosarcoma: According to some authors [22] myomas of the small intestine undergo malignant degeneration in 15 to 20 per cent of cases. It often is difficult to decide whether or not malignant changes are taking place histologically in a myoma. The evidence suggests that positive proof of malignant degeneration is the presence of metastases, which may be years in developing. Because leiomyosarcomas cause serious bleeding, they deserve particular attention in patients with melena.

(*d*) Argentaffinoma: Argentaffin tumors, carcinoids, arise from the Kultschitzky cells in the depth of the mucosal glands.[27a] They grow slowly and are usually regarded as benign tumors that may occasionally become malignant.[38] As a rule these tumors do not bleed.

(*e*) Metastases: Attention is called to the fact that secondary malignant tumors of the small bowel arising from lesions in neighboring viscera also may cause severe intestinal bleeding. We have seen this in metastases from the colon, gallbladder and pancreas. Roentgenographically these small intestinal implants look exactly like the primary growths described above.

Comment on Roentgen Manifestations of Benign and Malignant Tumors.—The roentgen manifestations of benign and malignant tumors will be considered together, because they so often look alike.

Delayed small intestinal transit of barium with or without obstruction is the most common observation in these tumors. It must be remembered, however, that neoplasms may be present without changes in intestinal motility. Indeed, the apparently healthy appearance of the small bowel, viewed radiographically, does not exclude the possibility of a tumor.

Small intestinal ileus, complete or incomplete, is an extremely significant observation. Any dilated loop of bowel, atonic or hyperactive, with or without gas, must be considered due to a tumor until proved of other origin. In carcinomas the point of obstruction often is annular and constricting. In the sarcomas the lesions are often polypoid and the obstruction due to intussusception. Large bulky masses, no matter what their cellular origin, produce obstruction as they grow into and obliterate the lumen of the intestine.

There are almost as many different roentgen patterns in small intestinal tumors as there are different tumors.[39] The extraluminal growths, which constitute about 25 per cent of some series, usually are nonobstructing.[40] These tumors arise in the wall of the intestine and grow away from the lumen, defying roentgen visualization. As they grow larger extrinsic pressure defects may appear. Ultimately, in lymphosarcomas particularly, the lumen of the involved segment of the intestine, instead of being encroached on, may actually appear dilated and aneurysmal because of necrosis and ulceration within the tumor mass.[40] In such instances the intestine usually appears ragged. The latter appearance, though more common in sarcomas, may also be seen in carcinomas.

The intraluminal defects may be large or small, sharply defined or indistinct, smooth surfaced or ragged, associated with or without obstruction. Many polyps, benign or malignant, appear as sharply defined filling defects witn perfectly smooth surfaces. These may be myomas, leiomyosarcomas, fibromas, adenomas, lipomas, or any other polypoid new growth. Some merely push the mucosa above it without distorting its pattern. Others "iron out" the mucosa, rendering it indistinct or obliterating it entirely. No reliable relationship seems to exist between the mucosal changes and the benignancy or malignancy of a neoplasm when the mucosal surface itself is not infiltrated or eroded. Some tumors involve a portion of the circumference of the intestine, others its entire wall.[34] Although most sharply defined, smooth-surfaced filling defects prove to be benign, many are malignant.

Occasionally a peculiar irregular "smear" of barium, left behind in the small bowel after the barium sulfate

32. Badia, P. D.: Primary Hodgkins' Sarcoma of Jejunum with Perforation, Resection and Radiotherapy: Case, Am. J. Surg. **59:** 577, 1943. Lymphosarcoma (Multiple) of Jejunum and Ileum, Cabot Case 28242, New England J. Med. **226:** 959, 1942. Botsford and Seibel.[27a] Kiefer.[5b]

33. This patient's roentgenograms were shown us by Dr. Arthur Finkelstein of the Graduate Hospital of the University of Pennsylvania.

34. Weber, H. M., and Kirklin, B. R.: Roentgenologic Manifestations of Tumors of the Small Intestine, Am. J. Roentgenol. **47:** 243, 1942.

35. Kahn, M., and Bay, M. W.: Carcinoma of Jejunum, Am. J. Surg. **58:** 145, 1942.

36. Mayo, C. H., and Nettour, W. S.: Carcinoma of Jejunum, Surg., Gynec. & Obst. **65:** 303, 1937.

37. (*a*) Adenocarcinoma of Jejunum, Cabot Case 33201, New England J. Med. **236:** 760, 1947. (*b*) Connolly, E. A., and Lemka, A. W.: Jejunal Malignancy, Surgery **21:** 901, 1947.

38. Miller, E. R., and Herrmann, W. W.: Argentaffin Tumors (Carcinoid) of Small Bowel: Roentgen Sign of Malignant Change, Radiology **39:** 214, 1942.

39. (*a*) Emmett, J. M., and Dreyfuss, M. L.: Malignant Tumors of Small Bowell, Ann. Surg. **123:** 859, 1946. Flynn, J. M.: Adenocarcinoma of Ileum, Am. J. Roentgenol. **48:** 163, 1942. (*b*) Weber, H. M.: Roentgenologic Manifestations on Non-Neoplastic Lesions of the Small Intestine, J. A. M. A. **113:** 1541 (Oct. 21) 1939. (*c*) Connolly and Lemka.[37b] Kiefer.[5b] Smith, Good and Gray.[28]

40. Lingley, J. R.: Non-Obstructing Malignant Hemorrhage of the Small Bowel, Am. J. Roentgenol. **36:** 902, 1936.

meal has completely passed, is the only significant roentgen observation in patients with small intestinal bleeding. It is probably due to a difference in the adhesive character of the mucous membrane overlying a growth, and observation of it is of inestimable diagnostic value in patients suspected of having small intestinal disease of any type, not only neoplasms. Its presence should be viewed with grave suspicion rather than ignored as an accidental observation.

Above all it must be remembered that more than one half of all intestinal growths escape detection by roentgen technic. An intestinal study revealing conditions interpreted as normal by no means excludes the presence of a lesion of the small intestine.

The roentgen observations in lymphosarcoma occasionally do vary a little from those described previously in the benign growths, carcinomas and certain forms of sarcoma. The lymphosarcomas tend to involve longer segments of bowel, and they often occur as multiple growths rather than single lesions. Sometimes the bowel is matted together as a sarcomatous mass with or without obstruction. The fact that the patient is known to have lymphosarcoma elsewhere in the body is often the key to the diagnosis. Although intussusception and perforation are considered rare in lymphosarcoma, we have seen both complications in this malignant tumor.

6. *Systemic Disease.*—(*a*) Vascular Diseases, also (*g*) Purpura and (*h*) Blood Dyscrasias: Among the intrinsic causes for bleeding from the small bowel are thromboses of mesenteric arteries and veins.[41] Occasionally, hemorrhages may be the result of rupture of arteriosclerotic blood vessels or peptic erosions secondary to endarteritis. In rare instances sudden collapse due to hemorrhage has been described in patients with malignant hypertension or periarteritis nodosa as the result of arterial necrosis.[42] The fact that the blood dyscrasias cause intestinal bleeding is common knowledge. The frequent occurrence of intestinal hemorrhage in Henoch-Schönlein (nonthrombopenic) purpura need only be recorded here.[43]

(*b*) Allergy: Gastrointestinal allergy as a cause for intestinal bleeding has been referred to in the literature.

(*c*) Gallbladder Disease and Pylethrombosis: That patients with gallbladder disease may have massive intestinal hemorrhage is noteworthy.[44] Also interesting is Bockus' comment [22] that gastrointestinal hemorrhage occurs often in patients with pylethrombosis.

(*d*) Azotemia: The bleeding that occurs in azotemia due to renal failure may be severe and exsanguinating.

(*e*) Foreign Bodies: Foreign bodies in the intestinal tract may cause bleeding. There is one report in the literature of a sponge left behind by a surgeon twenty-five years previously that eroded into the ileum causing severe intestinal hemorrhage.[45]

(*f*) Drugs: Ochsner,[30b] discussing a paper by Stone on obscure causes of intestinal bleeding, reported a patient who bled after large doses of acetylsalicylic acid which apparently had produced severe hypoprothrombinemia. It must be remembered, too, that acetylsalicylic acid may cause ulcers by direct contact with the mucous membrane. With the advent of curare therapy for muscular relaxation there has come experimental evidence that intestinal bleeding may ensue in patients in whom it is used.[26a]

41. Barry, M. W.: Hemorrhage from Small Bowel, Nebraska M. J. **31:** 367, 1946.

42. Navasques, DeS., and French, E. B.: Mediastinal Ulceration Due to Arterial Necrosis, Guy's Hosp. Rep. **96:** 85, 1947.

43. Whitmore, W. H., and Peterson, G. M.: Henoch's Purpura: Small Intestinal Changes; Case, Radiology **46:** 373, 1946.

44. Laird, E. G.; Gehret, A. M., and Rigney, L. J.: Massive Hemorrhage Concomitant with Cholecystitis, South. Surgeon **11:** 769, 1942.

45. Saltzstein, H. C., and Rao, J. O.: Large Melena Caused by Sponge Ulcerating into Lumen of Ileum More Than Twenty Years After Celiotomy, Ann. Surg. **125:** 249, 1947.

COMMENT

Physicians interested in the roentgen examination of the small intestine agree that the reliability of this form of examination falls far short of its record in the remaining portions of the alimentary tract. This they attribute to the physical characteristics of the small intestine.[46] Its greater length, its flexibility and pliability, its tendency to overlap itself and the frequent occurrence of abnormal intestinal patterns of reflex origin make examination of the small intestine extremely difficult. When one adds to these facts the common occurrence of extraluminal tumors as well as small intramural growths, one can appreciate why less than half of these lesions are identified by roentgen methods. The problem is made no less difficult by the realization that hemorrhage of itself may alter intestinal physiology. It is noteworthy that in dogs a loss of 20 per cent of total blood volume is attended by an immediate cessation of intestinal activity. Somewhat comparable observations have been noted in man when 500 cc. of blood has been withdrawn.[47]

It must always be remembered that more than one cause for intestinal bleeding may exist in the alimentary canal at the same time. The literature refers to 2 patients who were operated on for bleeding that was thought to be due to peptic ulcers but which subsequently was found to be due to a leiomyoma and a leiomyosarcoma.[23]

How best to examine the intestinal tract is a problem which will be handled differently by different radiologists. After many years of using water and barium sulfate for this study we have now changed to isotonic sodium chloride solution as the diluent because of its better taste and more rapid transit. We often deliberately use a second glass of barium sulfate or isotonic sodium chloride solution to hasten the course of the contrast medium through the small intestine. The Miller-Abbott tube is freely used for direct examination of small segments of the intestine after the presence of a lesion has been demonstrated by survey methods. Small intestinal enemas have also been used [48] for this purpose, care being taken to use a tube large enough to assure a flow of fluid that is free but not so rapid as to cause regurgitation or vomiting. The barium enema has been used time and again for visualizing the terminal ileum, and in the presence of an incompetent ileocecal valve this diagnostic technic may prove highly successful.

The fact that intestinal bleeding in 95 per cent of the cases proves to be of upper or lower intestinal origin must not dull one's senses to the possibility of a small intestinal cause for melena. A high index of suspicion is extremely important if deaths from exsanguinating hemorrhages are to be avoided and the best interests of patients with small bowel lesions are to be served.

46. (*a*) Schatzki, R.: Small Intestinal Enema, Am. J. Roentgenol. **50:** 743, 1943. (*b*) Schottenfeld.[27b] Weber.[30b]

47. Van Liere, E. J.: The Effect of Hemorrhage (Anemic Anoxia) On the Motility of the Small Intestine, Gastroenterology **4:** 353, 1945.

48. Gershon-Cohen, J., and Shay, H.: Barium Enteroclysis, Am. J. Roentgenol. **42:** 456, 1939. Schatzki.[46a]

SUMMARY

1. The records of 161 patients with small bowel lesions were reviewed to see in how many melena was a prominent symptom.

2. The cause for the bleeding was traced to the small intestine in 31 patients.

3. The occurrence of bleeding in various intestinal anomalies, infections and tumors was reemphasized.

4. The roentgen manifestations of these conditions were reviewed.

3400 Spruce Street (4) (Dr. Hodes).

ABSTRACT OF DISCUSSION

DR. ARTHUR FINKELSTEIN, Philadelphia: Dr. Hodes' splendid review of certain categories of lesions affecting the small bowel will represent one of the milestones along the early pathway of development of the roentgen diagnosis of such lesions. The ideal procedure would provide fluoroscopic and radiographic visualization of every small intestinal loop in order to demonstrate its distensibility, marginal contour, mucosal pattern, mobility, peristaltic activity, rate of flow, and distribution of the barium sulfate meal. In my experience, this information has usually been obtained best by a water-barium meal followed closely by fluoroscopy and exposure of films at intervals determined by the circumstances of the individual patient. Spot compression exposures are often necessary to separate superimposed loops and record their mucosal pattern. At times, special procedures such as the small intestinal enema or the ice-cold saline solution method of Weintraub and Williams may be required. It does not seem possible to obtain the desired information by a rigidly routine policy of exposing a large film of the abdomen at hourly intervals after ingestion of the barium meal, or similar schemes. If detailed, individualized fluoroscopic and radiographic studies are made, it should be possible to raise diagnostic accuracy considerably above the 50 per cent indicated by Dr. Hodes. At present there seems to be no easy method for accomplishing this.

DR. JONATHAN E. RHOADS, Philadelphia: Many instances of bleeding from the small intestine are overlooked far too long in clinical practice. Surgically, one is confronted with two types: those in which bleeding is of microscopic proporportions, generally occurring in adults, and those in which bleeding is brisk and at times massive and exsanguinating, commonly occurring in children. I am indebted to Dr. C. Everett Koop, chief of the surgical service of the Children's Hospital of Philadelphia, for most of the following experience. He and his associates have encountered bleeding in many cases of intussusception and in a few of these the bleeding has been rather bright. They have also encountered bleeding in a considerable number of patients with blood dyscrasias of various kinds. One syphilitic infant aged 2 months, who had no cutaneous lesions, had a diffuse hemorrhage from the small bowel, apparently associated with the syphilis. Another child had the rare blood dyscrasia, idiopathic hypofibrinogenemia. The remainder, and those who are of particular interest surgically, have either had a Meckel's diverticulum or a reduplication of the small bowel. There have been 3 children with reduplication of the small bowel and 18 with Meckel's diverticulum who presented hemorrhage; in 4 instances the hemorrhage was serious in rate and amount, and in 1 it was fatal almost immediately after admission. It is Dr. Koop's opinion, in which I concur, that severe gastrointestinal hemorrhage in young children, in whom blood dyscrasias have been ruled out, generally requires laparotomy for diagnosis and treatment. Although this sounds radical, so many of these hemorrhages are due to surgical lesions, and the resistance of the child to blood loss is so limited, that we consider laparotomy the best policy. At the Hospital of the University of Pennsylvania there have been 2 instances of severe bleeding in children with brain lesions in whom duodenal ulcers have developed. Attempts were made to treat both conservatively, but in both instances operation and gastric resection was necessary in the course of the hemorrhage. In adults there is generally more opportunity for careful study.

DR. PHILIP J. HODES, Philadelphia: I see Dr. James Case in the audience. I should like to pay homage to him, because he was one of the first to demonstrate a Meckel's diverticulum by roentgenologic means. Just two words about technic: For years we have used distilled water and barium sulfate as our contrast vehicle. We have recently turned to the isotonic sodium chloride solution advised by Ross Golden and others for two reasons: because the istonic sodium chloride solution makes a better-tasting mixture and because its transit through the small bowel is more rapid. If we are interested in the small intestine, after we have done the original part of the fluoroscopic and radiographic work the patient is then given a second glass of barium sulfate in isotonic sodium chloride solution. We examine the patient with the fluoroscope at intervals—fifteen minutes, a half hour, three quarters of an hour—depending on the transit time. Usually, at the end of an hour or an hour and a half, the head of the barium meal is in the cecum. If its transit is delayed, we then give the patient a third glass, this time giving him isotonic sodium chloride solution alone. In our experience the ice water or the ice-cold isotonic sodium chloride solution has not given the results we were led to expect.

APPROACH TO THE DIAGNOSIS OF THE COMMON TYPES OF CONGENITAL HEART DISEASE

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Boston

Frequently it is thought that the diagnosis of congenital heart disease can be made only by the specialist or in the medical center where it is possible to carry out elaborate diagnostic studies. Most of the important congenital defects can be correctly diagnosed by the physician who has a knowledge of certain basic facts and who inquires briefly into the history, uses his hands and stethoscope, and in certain instances makes use of the electrocardiograph, the x-ray tube or the fluoroscope. These facilities are available to most practicing physicians. Since the physician who first sees the patient plays one of the most important roles in the management of congenital defects of the heart, I should like to review for his benefit the important steps that are used in arriving at a diagnosis of the common congenital defects. This group includes the cases in which surgery has so much to offer at the present time, provided the patient is guided to the surgeon at the optimal time.

When should a congenital lesion of the heart be suspected? First, when there is a murmur which is known to have been present since early childhood (murmurs of acquired heart disease are seldom present before the age of 6).

Second, when there is a history of cyanosis having occurred in childhood, either transient or persistent. Some caution must be exercised in accepting a parent's statement in regard to cyanosis.

Third, when hypertension is discovered in a young patient. Coarctation of the aorta is included in this discussion of congenital anomalies.

DIAGNOSTIC AIDS

As mentioned previously, it is important to know the earliest period at which a murmur, a thrill or cyanosis was first detected. This is especially important when one is confronted with heart disease in a young adult and a differential diagnosis must be made between acquired and congenital disease, or a combination of the two. Organic murmurs discovered during the first few

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years of life are almost certain to be congenital. Also important is the history of unusual dyspnea on ordinary physical exertion. Frequently there will be a history of squatting when the dyspnea was severe. This posture seems to relieve the patient in a manner that is not entirely clear. It is important to know whether the child's physical and mental development have been normal. Some patients with congenital defects are poorly developed and nourished in spite of an adequate intake of food because of the interference with the flow of blood to the periphery of the body. Convulsions induced by exertion or crying may be highly significant. It is of some interest to know whether the mother had rubella ("German measles") or other virus infections during the first trimester of pregnancy. According to Gregg,[1] a high percentage of children born of mothers contracting rubella during the first trimester of pregnancy had congenital cardiac defects.

Experience has shown that the commonest reason for bringing a patient with congenital heart disease to the physician is that someone has discovered a murmur. Most careful attention should be devoted to the evaluation of the murmur, since great anxiety may be caused if the interpretation given is incorrect. The location, the intensity, the quality and the transmission of the murmur are of interest. Most of the murmurs of congenital heart disease are loud and harsh and are best heard along the left sternal border. The extent and the direction of the transmission of the murmur vary with the defect. Too much reliance cannot be placed on the location of the murmur as far as differentiating the various anomalies is concerned, especially in children. The murmurs are systolic in time; yet occasionally a highly significant diastolic murmur will also be heard. Not infrequently the murmur will be accompanied by a thrill, which always indicates that the murmur is due to an organic lesion.

The murmurs of acquired heart disease must be distinguished from those of congenital disease. A murmur of rheumatic heart disease may complicate the congenital defect. The murmurs of acquired heart disease rarely develop before the age of 6 years. They also tend to occur in somewhat different locations. For instance, the murmur associated with mitral endocarditis is heard best just medial to the apex and is well transmitted to the apex and to the axilla; it is accentuated by turning the patient to the left side. The murmur of aortic stenosis is heard at the base and is well transmitted into the neck. The murmur of aortic regurgitation is heard along the left sternal border but is seldom confused with a congenital murmur.

Physiologic heart murmurs are often more difficult to distinguish from congenital murmurs than are murmurs of acquired heart disease. Physiologic murmurs are usually soft, blowing murmurs, not widely transmitted and variable in their occurrence. If there is any doubt, the patient's course should be followed, care being taken not to alarm the parents. If the murmur is soft and systolic in time and the heart is not enlarged or abnormal in contour, it is probably of minor significance.

The presence of cyanosis and its distribution require careful attention. Cyanosis is seen when the peripheral circulation carries a certain amount of reduced hemoglobin—5 Gm. or more. It usually means that there is a shunt whereby venous blood gains entrance into the arterial system without going through the lungs. At times pulmonary factors may enter into the production of cyanosis, but deep cyanosis in the majority of cases is indicative of a shunt. The cyanosis may be present continuously, as it commonly is when there is an overriding aorta, or it may be transient. The transient type is sometimes seen when there is a defect of the auricular septum. Then the shunt is usually from the left to the right side of the heart, but under certain conditions the pressure in the right auricle may become greater than that in the left, thus reversing the usual current of the blood flow. A good example of this is seen in an infant with an auricular septal defect who becomes cyanotic with crying. The cyanosis is ordinarily of equal intensity in the upper and lower extremities. In certain lesions in which a patent ductus arteriosus forms an important communication between the circulations, however, the distribution will be unequal. For instance, when there is complete transposition of the great vessels with a patent ductus there will be intense cyanosis of the upper extremities, but the lower extremities will show less cyanosis because the oxygenated blood is entering into the circulation at the level of the ductus. Clubbing of the fingers and toes accompanies cyanosis and may call attention to its existence. If the cyanosis is of much intensity, an increase of erythrocyte count, hemoglobin value and hematocrit corpuscular volume will be found as the body attempts to compensate for the lack of oxygenated blood by creating more of the oxygen-carrying elements.

Elevated blood pressure in a young person should always direct attention to the pulsations of the abdominal aorta and the femoral arteries. Absence of these pulsations may be the key to the diagnosis of coarctation of the aorta.

The electrocardiogram can contribute valuable information by indicating evidence of strain of one or the other of the ventricles. Absence of predominant strain may be of significance, as in the case of patency of the ductus arteriosus. Conduction disturbances or arrhythmias may be useful signs. The electrocardiogram, however, is seldom diagnostic of congenital heart disease and even may be misleading at times.

Fluoroscopic observation of the heart and great vessels is an essential part of the examination. It is the best method available for determining enlargement of the various chambers or of the great vessels associated with the heart, and it is especially helpful in determining whether there are abnormal pulsations in the pulmonary vessels. An excellent discussion of this subject may be found in the book on congenital malformations of the heart by Helen Taussig.[2]

SPECIAL LABORATORY STUDIES

There are, in addition, certain studies which are more or less confirmatory but which are limited to hospitals where equipment and personnel are available. Cardiac catheterization is a procedure wherein a special catheter is introduced into the various chambers and great vessels through one of the antecubital veins. Samples of blood are withdrawn from the various locations and analyzed for oxygen content. If there is an increase in oxygen content of the right auricle as compared with the superior vena cava, the right ventricle as compared with the right auricle or the pulmonary artery as compared with the right ventricle, blood with a higher oxygen content from the left side of the heart is being shunted to the right side of the heart at the level at which the more highly oxygenated blood is found. Pressure readings can also be taken in the various locations. This procedure has been greatly simplified by the recent development of an electric manometer.

Cardiac catheterization is also utilized to determine the amount of blood flowing through the greater and lesser circulations. From this a quantitative estimate of the amount of blood shunted through the unnatural communications can be made. Although catheterization studies may provide highly useful information which at times is essential to an accurate diagnosis, it is not necessary or even desirable to carry them out in every case. Moreover, it is not always possible to direct the tip of the catheter to the desired location. When it may be especially vital to know the pressure in the pulmonary artery, the tip of the catheter cannot always be introduced through the opening of the stenosed pulmonary valve. At such times, blood flow studies or the test to be described may provide the desired information.

Bing and associates[3] have made use of an exercise test which is performed under standard conditions. In this test the expired air is collected in a Douglas bag, and the ratio of oxygen consumed per liter of ventilation is determined. The ratio falls in any condition in which it is impossible to increase the pulmonary flow during exercise and rises when the flow can be increased. This is especially helpful in detecting the presence of stenosis of the pulmonary valve or atresia of the tricuspid valve.

If concentrated iodopyracet solution N.N.R. (concentrated solution diodrast 70 per cent W/V®) is introduced into the

1. Gregg, M. M.: Congenital Cataracts Following German Measles in the Mother, Tr. Ophth. Soc., Australia **3**: 35, 1941.

2. Taussig, H. B.: Congenital Malformations of the Heart, New York, The Commonwealth Fund, 1947, pp. 24-48.

3. Bing, R. J.; Vandam, L. D., and Gray, F. D., Jr.: Physiological Studies in Congenital Heart Disease, Bull. Johns Hopkins Hosp. **80**: 107-120 (Feb.) 1947.

circulation in a rapid manner and serial roentgenograms are taken as the material goes through the various components of the circulation, the roentgen series may prove helpful in localizing certain lesions. This procedure requires the coordination of a team, and even so it may be difficult to expose the film at the exact moment the material is at the site of the lesion. At the present time at the Lahey Clinic we use this procedure only in the presence of coarctation of the aorta, not as a diagnostic procedure, but as a means of giving the surgeon some knowledge of the vessels he will encounter before the chest is opened. The material is usually introduced into the venous side of the circulation, but attempts are now being made to pass a catheter through the brachial artery to the site of the coarctation and inject the iodopyracet solution through this, thus obtaining sufficient iodopyracet at the exact site of the lesion.

ANALYSIS OF ONE HUNDRED CASES

Let us now approach the subject of diagnosis from the standpoint of probabilities. A group of 100 consecutive patients with congenital heart disease seen at the Lahey Clinic were studied with special reference to the various diagnostic features. The distribution of the congenital defects is shown in the accompanying table. Ninety-two per cent of the patients fell into four groups corresponding to the common types of congenital heart disease. It is the diagnostic features of these four types which I wish to discuss in greater detail. Although each group has a number of classic findings, such findings were not present in every patient of the group. In 5 cases it was impossible to explain adequately all the findings, even with catheterization studies.

Congenital Defects in a Series of 100 Patients

Septal defects		48
Auricular	30	
Ventricular	11	
Unclassified	7	
Coarctation of the aorta		20
Patent ductus arteriosus		12
Tetralogy of Fallot		12
Eisenmenger complex		2
Pulmonary stenosis		1
Unclassified		5
		100

Septal Defects.—Patients with defects of the auricular and ventricular septums formed by far the largest group of this series (48 per cent). The clinical findings of these two anomalies are in most instances sufficiently distinctive for an accurate diagnosis to be made; however, in 7 cases this was not true. Catheterization studies could not be carried out in these cases. Differential oxygen studies of samples of blood withdrawn through the catheter constitute the simplest means of confirming the diagnosis when confusion exists.

Thirty patients had the findings of auricular septal defects. Twenty of these were females and 10 were males; they ranged in age from 19 months to 33 years. The most common complaint was that a physician had discovered a murmur. Nine (30 per cent) of the patients had no symptoms whatsoever. The parent, on the other hand, often noted symptoms after learning of the murmur. Shortness of breath was a complaint in 8 (26 per cent). Transient cyanosis, often limited to the first few weeks of life, was noted in 7 (23 per cent). Irregular heart action was noted in 3 (10 per cent), and palpitation in 3 others. Seven (23 per cent) gave a history of repeated attacks of pneumonia. Perhaps some of these attacks were in reality pulmonary congestion precipitated by infection of the respiratory tract. There was a definite history of rheumatic fever in 2 cases.

Not infrequently, patients with auricular septal defects are found to be poorly developed and poorly nourished. This was the case in 9 (30 per cent) of this group; 19 were thought to be within the limits of normal, and only 1 patient was obese.

The murmur is the diagnostic feature most likely to be present in cases of auricular septal defects. It is moderately loud, somewhat harsh, and is heard best along the left sternal border in the second and third interspaces. The murmur is not widely transmitted under ordinary circumstances. When the murmur is well heard at the apex also, one should consider the coexistence of a rheumatic lesion. The murmur is systolic in time; however, in 3 (10 per cent) there was a short, blowing diastolic component. The diastolic portion of the murmur is said to result from a relative insufficiency of the pulmonary valve due to dilatation of the pulmonary artery. Here again one must be careful to exclude a coexisting rheumatic lesion. Auricular and ventricular septal defects cannot be differentiated by the location of the murmur alone. There is a tendency to think of the murmur of an auricular septal defect as being somewhat higher than that of a ventricular septal defect. It should be pointed out, however, that the actual sites of the two defects are close together and that at times the auricular may be at a lower level than the ventricular septal defect. The murmur of the auricular septal defect is heard in the second and third left interspaces since the murmur is transmitted along the pulmonary artery. Actually, the increased volume of blood flowing through the pulmonary artery may play a role in the production of the murmur. A systolic thrill accompanied the murmur and was noted at the site of maximum intensity of the murmur in 8 of this group.

An auricular septal defect interferes with the normal function of the heart because the blood returning to the left auricle tends to be shunted into the right auricle and recirculates through the lungs. Then the peripheral circulation receives less than its share of blood and a great strain may be placed on the right side of the heart. The diminution of peripheral flow may cause disturbances in growth and nutrition. Since the shunt is predominantly from left to right, there is usually no cyanosis. During the first few weeks of life the pressure at times may be higher in the right auricle than in the left and cyanosis will be noted. Later, any activity that alters the pressure relationship in the two auricles may produce a transient type of cyanosis. A history of cyanosis occurring in an infant during crying is suggestive of an auricular septal defect. If a lesion is acquired in the mitral valve, interfering with the flow of blood through that structure, the left to right shunt may be increased, a condition known as Lutembacher's complex, disease or syndrome. The increased volume of blood flowing through the lesser circulation causes enlargement of the right auricle, the right ventricle and the pulmonary artery, thereby giving rise to the characteristic silhouette noted in the fluoroscopic examination (fig. 1). The pulmonary artery appears dilated and pulsates more vigorously than normally. When the patient is turned to the right anterior oblique position, the right ventricle is found to be more prominent than it is normally. The enlargement of the right ventricle may push the left ventricle laterally toward the chest wall and thus increase the cardiothoracic ratio as determined in the anteroposterior roentgenogram. The degree of enlargement of the pulmonary artery depends, of course, on the amount of

blood shunted through the defect, and here the size of the defect, as well as the pressure relationships, enters the picture. An enlarged pulmonary artery was found in 17 (56 per cent) of the 30 patients with auricular septal defect, and the cardiothoracic ratio was increased in 8 (26 per cent). The size and the contour of the heart were not altered in 8 (26 per cent).

The stress on the right side of the heart may be shown by the electrocardiogram. Evidence of right axis deviation was found in 13 (43 per cent) of the group. There was evidence of conduction disturbances in 30. Right axis deviation may be helpful in differentiating an auricular septal defect from a patent ductus, as right axis deviation rarely occurs with an uncomplicated patent ductus.

It may be necessary to distinguish an auricular septal defect from pure pulmonary stenosis accompanied by dilatation of the pulmonary artery. The latter condition is rare, but when it is present, the fluoroscopic picture is much the same as that of auricular septal defect. In pure pulmonary stenosis the lung fields are unusually clear, however, and the vessels show no expansile pulsations. The standard exercise test differentiates the two conditions, the consumption of oxygen increasing with auricular septal defect and decreasing with pulmonary stenosis.

Studies are under way to attempt closure of these defects by surgical means, and the time may come when this will be a common procedure. For the present, management of these defects is medical. One of the most important functions a physician can perform is to give reassurance, because the prognosis is better than is generally realized. Taussig gave the average length of life as forty years, and this may be extended with more satisfactory treatment of subacute bacterial endocarditis, which complicates 10 per cent of these cases. When parents find that a child has a congenital heart defect, especially one that cannot be corrected by surgery, they tend to become unduly anxious. Attempts should be made to have the child lead as normal a life as possible. If the heart is not enlarged, only strenuous physical activity should be curtailed. Special emphasis should be placed on care at the time of infections of the respiratory tract, since there is in these patients a decided tendency for rheumatic fever to develop, as well as subacute bacterial endocarditis. Should congestive heart failure develop, it will require treatment and subsequent curtailment of activity.

In summary, a diagnosis of an auricular septal defect should be considered when one is confronted with a moderately loud and harsh systolic murmur heard along the left sternal border in the second and third interspaces in a noncyanotic, poorly developed and poorly nourished patient, with right axis deviation shown in the electrocardiogram, and a prominent pulsating pulmonary artery and a large right ventricle fluoroscopically.

Ventricular septal defects present in many respects a striking contrast to those of the auricular septum. When they are unassociated with other congenital lesions, such as displacement of the large vessels, these defects are small, usually 1 cm. or less in diameter, and located near the base of the ventricular septum near the aortic and pulmonic valves. Because of the small opening, less blood is shunted into the pulmonary circulation in spite of the great difference of pressure that exists between the right and left ventricles. The difference of pressure tends to produce a louder murmur than the one resulting from an auricular septal defect, and the murmur is more widely transmitted. Characteristically, it is systolic in time, loud, rasping in character, and is heard along the left sternal border at the third and fourth interspaces. The 11 patients of this group all presented such a murmur, which was widely transmitted to the lung fields, the axilla and the back of the thorax. There was an accompanying diastolic murmur of short duration in 1. The murmur was accompanied by a pronounced systolic thrill in 7 patients (70 per cent). Eight of the patients had no symptoms whatsoever, but 2 complained of dyspnea on exertion. One gave a history of an episode of congestive heart failure, and another is in chronic right-sided heart failure at the present time. In contrast to the patients with auricular septal defects, 9 of these patients had developed normally and were well nourished.

Since there is less disturbance of cardiac function, there is less tendency to deform the normal contour of the heart. In 8 (80 per cent) of this group the heart was of normal size and contour by fluoroscopy. One showed a slightly prominent pulmonary artery, and another—the patient in chronic congestive failure—showed enlargement of the right ventricle. The electrocardiograms of 7 of the group were normal; of the

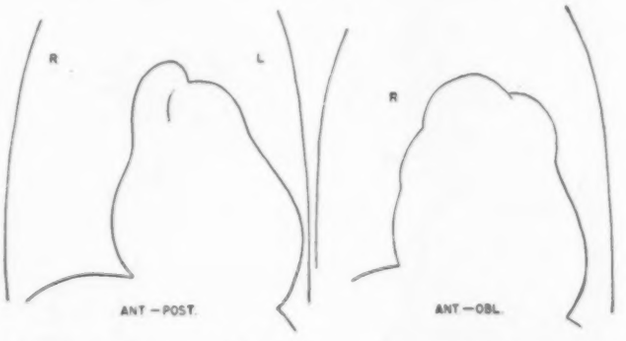

Fig. 1.—Auricular septal defect. The tracing was made from a roentgenogram. The heart is enlarged, especially the right ventricle, and the pulmonary artery is prominent.

remaining ones, right axis deviation was found in 1 and conduction disturbances in 2; one of these 2 has complete auricular-ventricular dissociation.

Cyanosis does not occur in patients with ventricular septal defect, because the shunt is from left to right. This may be an important point in distinguishing this from auricular septal defect. Other differential points are the louder, harsher, more widely transmitted murmur, the normal electrocardiogram and the normal size and shape of the cardiac silhouette.

Here again the prognosis in general is good. The majority of patients can lead a normal life, restricting their physical activity only when symptoms occur or cardiac enlargement appears. There is a tendency for subacute bacterial endocarditis to develop, as happened in one of this group. The disease responded to large doses of penicillin. If a large defect is present, congestive heart failure may develop, which is rather resistant to treatment.

In summary, a diagnosis of ventricular septal defect should be considered when there is a loud, harsh systolic murmur, heard best along the left sternal border, widely transmitted and usually accompanied by a thrill, with little change in the size or the shape of the heart or in the electrocardiogram.

Coarctation of the Aorta.—For the average physician, coarctation of the aorta is perhaps the easiest of all congenital anomalies to diagnose accurately. The

important thing is to keep the possibility of this condition in mind, especially when one is confronted with hypertension in a young person. In this series 20 patients had a confirmed diagnosis of coarctation of the aorta. Thirteen of the group were males and 7 were females. All were adults. Other series have shown a higher ratio of men to women—4 to 1 in Abbott's [4] series.

One of the striking features was the physical stature of the patients. All the men were of normal height. Although 2 of the men were rather thin, 3 were unusually robust. Two of the women were below average in height as compared with their own family as well as the general population. One was 53 inches tall at 28 years of age and the other 58 inches at 23 years of age.

Subjective complaints were strikingly absent. Sixteen had no complaints at all. Two complained of occipital headaches and dyspnea on exertion, but these symptoms developed only after they had been told of the existence of the coarctation. One patient had angina pectoris, possibly unrelated to the condition of the aorta; another had Stokes-Adams attacks, owing to the coexistence of another abnormality—complete auricular-ventricular dissociation.

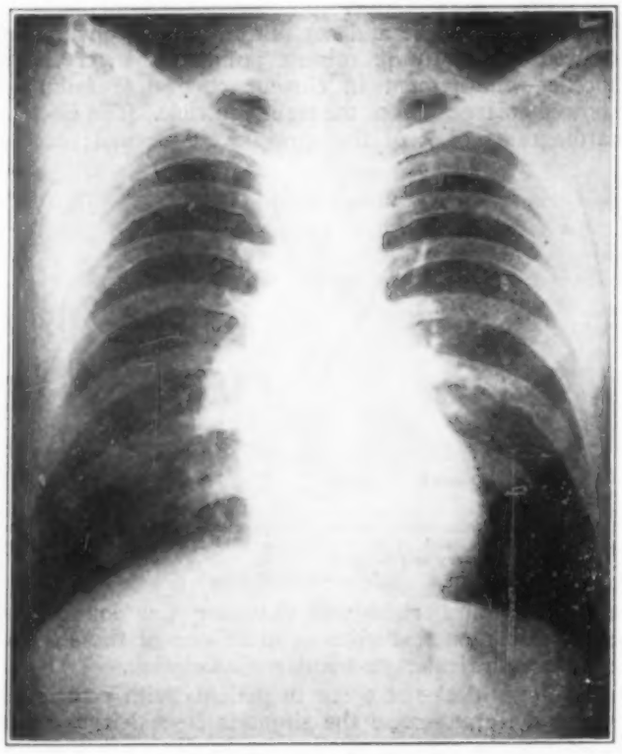

Fig. 2.—Coarctation of the aorta. The aortic knob is not seen. Note the scalloping of the inferior margins of the ribs.

It is interesting to note how the condition was first discovered in these patients. Three patients knew of it when they registered at the clinic; the other 17 knew only that they had hypertension. Nine of these found they had hypertension when they had physical examinations for unrelated conditions. In 3 the condition was discovered in the course of insurance examinations. Six were found to have it when they were examined for selective service, and 2 women were discovered to have it when examined during pregnancy.

4. Abbott, M. E.: Atlas of Congenital Cardiac Disease, New York, American Heart Association, 1936.

Given a young person with hypertension, one's next step is to check the pulsations of the abdominal aorta and the femoral arteries. In most patients with coarctation the pulsations of these vessels are diminished or absent. Pulsations of the abdominal aorta were completely absent in 17 and only faintly felt in 3. In 5 patients no pulsations could be felt in the abdominal aorta but faint pulsations were felt in the femoral arteries. In 2 patients faint pulsations were present in the vessels of the feet when the pulsations were absent above.

Pulsations of the intercostal vessels are an important diagnostic sign. The intercostal arteries play a major role in the collateral circulation, and their enlargement may be great enough that pulsations can be felt under the rib margins. Pulsations of the intercostal vessels were definitely palpable in only 8 of this group.

The arterial pressure in the arms should be compared with that in the legs. Normally, the pressure is higher in the legs; however, great difficulty may be met in taking the pressure from the legs unless a special cuff is available. In cases of coarctation the arterial pressure in the legs, if obtained at all, is lower than that in the arms. It was obtained in 9 of this group (with considerable difficulty and uncertainty), and in each instance there was a marked difference between the leg and arm pressures.

Auscultation of the chest usually reveals a characteristic murmur. In some cases, however, the murmur is not sufficiently distinctive to lead one to make the diagnosis unless it is combined with other signs. The typical murmur of coarctation is loud, rough, systolic in time, clearly heard along the left sternal border and usually equally well heard in the back along the left margin of the vertebral column at the upper level of the scapula. This murmur was heard in all patients of this group, although in 1 it was faint along the sternal border. The murmur in the back is likely to be more sustained.

In 6 patients, in addition, a soft, blowing diastolic murmur was heard along the left sternal border. This is usually attributed to a defect of the aortic valve. In 1 patient who was operated on a functioning patent ductus arteriosus was found and ligated and the murmur (which was definitely not the machinery murmur usually associated with a patent ductus) disappeared after operation. The diastolic murmur often leads to the erroneous diagnosis of rheumatic heart disease. The distinctive character of the murmur in the back should help to differentiate the condition.

Three patients gave a history of rheumatic fever, and in 2 there were murmurs in the mitral valve area strongly suggestive of rheumatic endocarditis of that valve. A systolic thrill was felt along the left sternal border in 4 patients.

In 9 cases of coarctation of the aorta unusual tortuosity of the fundal vessels was revealed. This must be distinguished from the postangiospastic state of the vessels in essential hypertension.

At times the roentgenologist is the first to suggest this diagnosis. The increased volume of blood flowing through the intercostal vessels produces the characteristic notching along the inferior margin of the ribs, an invaluable aid in confirming the diagnosis (fig. 2). This notching was present in all but one of this group.

In 2, however, the notching was seen with difficulty. Reifenstein, Levine and Gross [5] reported its presence in 75 per cent of their series of 43 cases.

Angiography, with 70 per cent iodopyracet injected by the method of Robb and Steinberg,[6] while not usually required for the diagnosis, may give information which is helpful to the surgeon in planning the type of operation and the surgical approach. The procedure should not be undertaken without adequate equipment, a trained team and careful consideration of the possible information to be gained.

The average age at the time of registration was 25.7 years. It is desirable to reduce this figure in view of the excellent results of surgical treatment when such patients are operated on at an opportune time. The vessels of younger patients lend themselves to surgical procedures better than those of older patients, since they are more elastic and less friable.

In summary, a diagnosis of coarctation of the aorta should be considered whenever a difference is encountered in the blood pressure levels of the upper and the lower extremities, with pulsations of the abdominal aorta and the femoral arteries diminished or absent and a rough systolic murmur heard as well in the back as along the left sternal border. The diagnosis is usually confirmed if notching of the under surface of the ribs is present in the roentgenogram.

Patent Ductus Arteriosus.—Patency of the ductus arteriosus was found in 12 of the 100 patients. When the findings are typical, this anomaly is one of the most readily detected of the congenital defects. There were 9 females and 3 males; the ages varied from 2½ to 48 years. In patency of the ductus, as in auricular septal defect, an inordinate amount of blood may be shunted from the aorta back into the pulmonary circulation, and thus the periphery is deprived of its normal amount. As a result the patient is likely to be poorly developed and nourished, and this was found in 9 of this group. The symptoms vary in severity, depending on the amount of blood shunted to the lesser circulation. Five patients had no symptoms; 1 patient had borne 4 children uneventfully. On the other hand, 2 patients were practically invalided by the condition. Five others complained of dyspnea on exertion. There was a history of repeated attacks of pneumonia (possibly pulmonary congestion) in 3. Cyanosis was reported in only 1, and this only during the first few weeks of life. The murmur of a patent ductus was considered characteristic in 10 (83 per cent). The typical murmur is a loud, rough, continuous murmur with systolic accentuation. This produces the characteristic humming sound to which the term "machinery murmur" has been applied. It is best heard in the pulmonary area and under the left clavicle, and it is strongly transmitted into the left lung field. A prominent thrill was detected in all but 1 patient. The thrill is noted in diastole as well as in systole, and, again, is best felt under the left clavicle. The murmur was not continuous in 2 patients, both of whom were proved to have a patent ductus at operation. One patient was 4 and the other 12 years of age. According to Taussig, the characteristic murmur is not usually found in patients under 1 year of age and frequently may be absent up to the age of 6. It is important to emphasize, however, that even after this age the murmur may not be continuous. If the patient is under 6, the murmur is not continuous, and if no complications arise, he should be examined at intervals to determine whether the murmur changes. Catheterization studies may be necessary to confirm the diagnosis in questionable cases, especially if surgical intervention is to be considered. These studies reveal increased pressure in the pulmonary artery, and blood withdrawn from this location will show a higher oxygen content compared with that of the right ventricle.

The fluoroscope usually reveals an enlargement of the pulmonary artery with increased pulsations (fig. 3). This was found in 10 (83 per cent) of this group (1 patient was not examined with the fluoroscope). Seven showed, in addition, enlargement of the left ventricle. The patent ductus tends to place a strain on both ventricles, but the strain is usually more pronounced on the left. This may be an important point in differentiating this defect from an auricular septal defect, which also produces an enlarged pulmonary artery. The right ventricle, it will be remembered, is enlarged with an auricular septal defect.

The electrocardiogram was normal in 6 cases. There was evidence of left ventricular strain in 4, but in 2 there was slight right axis deviation, which is unusual since the strain on the left ventricle tends to predominate. One should then search for additional lesions that might complicate the picture.

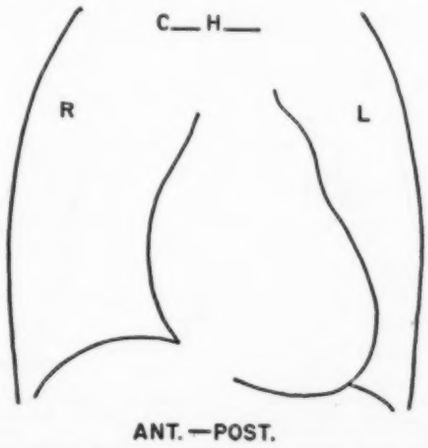

Fig. 3.—Patent ductus arteriosus. The tracing was made from a roentgenogram. There is enlargement of the left ventricle, and the pulmonary artery is prominent.

A low diastolic pressure with resulting widening of the pulse pressure was found in 7 patients. In 2 the diastolic pressure could not be obtained.

The ligation of a patent ductus may produce dramatic changes in the patient. The 2 patients who were invalided by the condition have become normal girls. One has gained 9 inches (23 cm.) in height in the two years since surgical intervention; the other has gained 27 pounds (12 Kg.) in the four months following operation. The question always arises as to the advisability of operative intervention when the anomaly is discovered. When the diagnosis is made in childhood, the ductus should be ligated when the child reaches the optimal age, which is between 5 and 12 years. It can and should be done sooner if the condition of the patient is precarious, as it was in a patient of this group. When one is confronted with the problem in the case of an adult, the situation must be carefully evaluated. The risk of surgical treatment is greater after the age of 20 but so is the risk of the patent ductus. According to

5. Reifenstein, G. H.; Levine, S. A., and Gross, R. E.: Coarctation of the Aorta, Am. Heart J. **33**:146-168 (Feb.) 1947.
6. Robb, G. P., and Steinberg, I.: Visualization of Chambers of Heart, Pulmonary Circulation and Great Blood Vessels in Heart Disease, Am. J. Roentgenol. **42**: 14-37 (July) 1939.

Shapiro and Keys,[7] the average age at the time of death in untreated patients is 25 years. The development of left ventricular insufficiency or subacute bacterial endarteritis should certainly lead one to consider operation.

So far as the differential diagnosis is concerned, little difficulty is encountered when the murmur is continuous. Some difficulty may be encountered in distinguishing a patent ductus from an auricular septal defect, for the fluoroscopic picture and the murmur may be much the same in both conditions. Patients who have pure pulmonary stenosis with dilatation of the pulmonary artery may also present a similar picture. Catheterization studies or the standard exercise test usually will differentiate the conditions.

In summary, patent ductus arteriosus should be considered when the patient has a continuous loud humming murmur heard best at the pulmonic area, and the fluoroscopic study reveals an enlarged pulsating pulmonary artery with an enlarged left ventricle and low diastolic blood pressure.

Tetralogy of Fallot.—This seemingly strange combination of congenital defects, namely, a defect in the interventricular septum, an aorta which overrides this

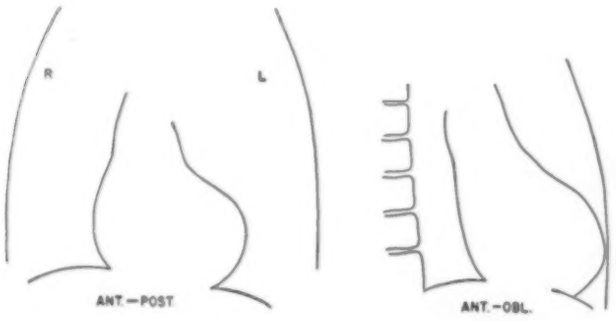

Fig. 4.—Tetralogy of Fallot. The tracing was made from a roentgenogram. The anteroposterior brim shows the elevated cardiac apex and the concavity in the region of the pulmonary artery. Note how the enlarged right ventricle approaches the chest wall in the right anterior oblique view.

defect and is thus said to be in dextroposition, pulmonary stenosis and, as a result of the last-named condition, hypertrophy of the right ventricle, is not too difficult to recognize. There may be other defects in addition, such as a patent ductus or an auricular septal defect, but they are not necessarily a part of the tetralogy. Difficulty in recognizing this combination is reduced because it is by far the commonest congenital condition with which a patient who has permanent cyanosis lives more than a few years. It is important because many times a great deal can be done surgically for children for whom the prognosis is otherwise poor.

Since the aorta receives blood from both ventricles, cyanosis of varying degrees is present, depending especially on the amount of blood which enters the aorta from the right ventricle. As a result of the pulmonary stenosis there are diminution of the pulmonary flow and dyspnea on exertion.

There were 12 patients with the tetralogy of Fallot in this series. Ten were males and 2 were females. The ages varied from 15 months to 35 years. All of the patients had cyanosis, which had been present since birth or shortly thereafter. The cyanosis varied from a mild discoloration limited to the nails and the lips to an intense bluish purple of nail beds, mucous membranes, cheeks and ears. The conjunctivas were congested in the severe form. Clubbing of the fingers and toes accompanies and roughly parallels the amount of cyanosis. All the patients in this group gave a history of dyspnea of considerable severity on even slight exertion, but in 4 the dyspnea was so severe as to handicap the patient greatly. One child was comfortable only while in the prone position. Two others could walk only a few steps without assuming the squatting position so commonly noted in cases of tetralogy of Fallot. Three patients had severe and frequently recurring episodes of unconsciousness with convulsions. Two children had convulsions when crying or excited, or often when feeding was attempted, thus presenting not only a nutritional problem but the need of great care so far as the parents were concerned. Severe and constant headache was a complaint in 7 cases. One patient complained of substernal pain on exertion. The mental development was considered retarded in 2, but it is surprising how intelligent many of these patients are even in the presence of severe cyanosis. The physical development was retarded in 8 patients.

All the patients were found to have a characteristic loud, rough systolic murmur along the left sternal border. One patient had, in addition, a short diastolic murmur, probably due to a small, malfunctioning ductus found later at operation. All but one had a detectable thrill accompanying the murmur.

The usual fluoroscopic picture is a heart that seems surprisingly normal in size in the anteroposterior view but which presents a prominent right ventricle in the right anterior oblique view (fig. 4). The enlargement of the right ventricle often elevates the cardiac apex somewhat. The left border of the heart at the level of the pulmonary conus is either straight or slightly concave; occasionally the pulmonary artery is somewhat prominent. The fluoroscopic examination revealed the classic findings in 10 patients; however, in 2 the pulmonary artery was prominent. When this situation exists, great caution must be exercised in differentiating the condition from the Eisenmenger complex, which is similar except that there is no pulmonary stenosis, the pulmonary artery being dilated with a pressure the same as that of the right ventricle instead of lower as in the tetralogy of Fallot. The anastomosis introduced by Blalock and Taussig [8] is contraindicated in the presence of elevated pressure of the pulmonary artery. When the pulmonary artery is prominent, the lung fields should be carefully searched for evidence of expansile pulsations in the vessels. The standard exercise test is helpful in differentiating the two conditions, since the ratio of oxygen consumption during exercise decreases in the tetralogy of Fallot and rises in the Eisenmenger complex. Catheterization studies revealing a high pressure in the pulmonary artery are also confirmatory of the Eisenmenger complex.

Besides the Eisenmenger complex it may be necessary to differentiate the tetralogy of Fallot from another condition causing cyanosis, namely, an arteriovenous aneurysm of the pulmonary vessels. With the latter a shadow is usually seen outside the cardiac outline in the roentgenogram. Although a continuous murmur, such as is heard in a patent ductus, would be expected

7. Shapiro, M. J., and Keys, A.: The Prognosis of Untreated Patent Ductus Arteriosus and the Results of Surgical Intervention, Am. J. M. Sc. **206**: 174-183 (Aug.) 1943.

8. Blalock, A., and Taussig, H. B.: The Surgical Treatment of Malformations of the Heart in Which There is Pulmonary Stenosis or Pulmonary Atresia, J. A. M. A. **128**: 189-202 (May 19) 1945.

at the site of such a lesion, cases have been reported[9] in which no murmur was present. Angiographic studies are of value in distinguishing this lesion.

A satisfactory electrocardiograms was obtained in 10 cases, and all showed pronounced right axis deviation.

In most cases of the tetralogy of Fallot there is an increase in the erythrocyte count, the hemoglobin content and the hematocrit corpuscular volume. The polycythemia was only slight in 3 cases; however, it was not unusual to find a hemoglobin content of 25 to 28 Gm. (160 to 180 per cent). The highest erythrocyte count obtained was 9,590,000, with a hematocrit reading of 86 per cent. The percentage of oxygen saturation of the peripheral blood is reduced and is further reduced with exercise, as more venous blood is then shunted to the periphery. The oxygen saturation in 1 case was 29.3 volumes per cent at rest.

In summary, a diagnosis of tetralogy of Fallot should be considered when one is confronted with a permanently cyanotic person who has managed to live past the first few years of life, who has a rough systolic murmur and right axis deviation in the electrocardiogram and who on fluoroscopic examination is found to have an enlarged right ventricle with a small pulmonary artery.

SUMMARY

Ninety per cent of the patients with congenital disease of the heart and great vessels fall into one of four groups characterized by, respectively, septal defects, coarctation of the aorta, patent ductus arteriosus and the tetralogy of Fallot. The clinical and laboratory findings in the majority of cases of each of these defects are sufficiently characteristic to permit the physician to make a reasonably accurate diagnosis or at least to recognize that a congenital defect is present. The physician who recognizes a condition which is amenable to surgical treatment and directs the patient to a surgeon at an opportune age performs a real service for that patient.

ABSTRACT OF DISCUSSION

DR. ALLAN L. FRIEDLICH, Baltimore: Dr. Rutledge has emphasized that a high proportion of cases of congenital heart disease may be diagnosed on clinical grounds alone. The importance of this is obvious, when one realizes that two of the conditions, patent ductus arteriosus and coarctation of the aorta, may be cured and that a third, the tetralogy of Fallot, may be greatly benefited surgically. There are a few patients in whom the signs and symptoms do not fit into the classic patterns which have been outlined. Additional studies often help one to arrive at a diagnosis in these patients. For example, in the patient with an auricular septal defect, in whom the atypical feature of cyanosis is found, one may resort to cardiac catheterization. A septal defect can be located by variations in the oxygen content of blood samples from the venae cavae, right auricle, right ventricle and the pulmonary artery. In addition, one can measure the pressure relationships between these chambers and calculate the volume of blood flow through the pulmonary artery and the aorta and through shunts. When one is considering ligation of a patent ductus arteriosus, it is important to be sure that the ductus is not compensating for another congenital anomaly, such as the tetralogy of Fallot. Therefore, catheterization of the heart is usually advised in patients with an atypical murmur of patent ductus arteriosus, when cyanosis or right axis deviation is present, or when unusual clarity of the lung fields is found by roentgen ray studies. Special studies are not required in the typical case of the tetralogy of Fallot. In the unusual case of a cyanotic child without right axis deviation, without the usual concavity of the pulmonary conus by roentgen examination or without the usual short circulation time found in this condition, further studies may be performed. Dr. Rutledge has already mentioned the breathing exercise test. Angiocardiography is useful chiefly in differentiating the tetralogy from transposition of the great vessels. In the atypical case of tetralogy of Fallot, catheterization can often establish with certainty the presence of a pulmonic stenosis by demonstrating a lower systolic pressure in the pulmonary artery than that found in the right ventricle.

DR. HYMAN I. GOLDSTEIN, Camden, N. J.: A number of writers in the past two or three centuries have informatively reported instances of congenital cardiovascular anomalies, but, as frequently happens, their works are overlooked or entirely forgotten. Among such names are those of Niels Stensen, who first reported a case of ventricular septal defect, pulmonary stenosis or atresia, dextraposition of aorta and hypertrophy of the right ventricle, or tetralogy of Fallot (1671-1672), as did also Morgagni (1761), Eduard Sandifort (1777); William Hunter (1784); Farre (1814); Elie Gintrac (1824); Peacock (1865—collected 18 cases), and others. Yet the speaker and the members of the medical profession generally refer only to the "tetralogy of Fallot," whose report on "maladie bleue" appeared in several installments in 1888 (*Marseille Medical* **25**:1888)—two hundred sixteen years after Stensen published his report (Thomas Bartholinus' *Acta med. et phil., Hafn.*). Coarctation of the aorta was observed by: Morgagni (1761); Paris (1789); A. Reynaud (*Jour. Hebdomadaire de Méd.* **1**:161-175, 1828) (with an illustration); Laennec; Graham; John Bell; Sir Astley Cooper, and Peacock (collected 46 cases in 1866). Reynaud's patient was 92 years of age—coarctation proved at autopsy. Bonnet (1903) collected 192 cases and divided them into infantile and adult types. I refer, also, to the case report by Corvisart, Leroux and Boyer (1815). It is of interest to refer to Wilson King's correct diagnosis, during life, of patency of the ductus arteriosus in Thomas Addison's patient (specimen demonstrated by Babington). Bernutz a century ago reported a case of clinically diagnosed patent ductus arteriosus (*Arch. gén. de méd.* Paris **20**: 415, 1849). Hope in 1839 correctly diagnosed pulmonary stenosis and a patent interventricular septum, confirmed at necropsy. I make these comments to call attention to the errors of priority credit, so often perpetuated by leaders in medicine and teachers in medical schools. Similarly the eponymic term "Stokes-Adams syndrome" has been erroneously perpetuated although heart block with dizziness, convulsions and slow pulse was previously reported by Gerbezius (1718), Morgagni (1761), Thomas Spens (1793) and Sir William Burrett (1824). Archangelus Piccolhomini in 1586 wrote that in his opinion sudden unexpected departure from this world is caused by blocking of the cord or vessel to the heart (coronary thrombosis).

DR. DAVID I. RUTLEDGE, Boston: The prognosis in these four common types is really much better than the average physician thinks. For instance, patients with septal defects in many instances lead a perfectly normal life, but when the parents are told that their child has a congenital defect, they are likely to get alarmed. They want to restrict the activities of the child and to rush to some medical center to see if something cannot be done about the defect. So the parents as well as the child must be handled when one makes a diagnosis of a congenital defect.

Coarctation of the aorta, of course, is now curable if the patient is seen at an opportune age. He cannot be operated on if he is too old. Patent ductus arteriosus should be recognized, and, when necessary, surgical treatment should be instituted. The results are excellent. The average length of life of patients with the tetralogy of Fallot used to be around twelve to fourteen years; it is being much prolonged by a Blalock-Taussig operation. It is not known how long these patients will live, but certainly they are vastly improved and their life is being extended.

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PERTUSSIS TREATED WITH CHLORAMPHENICAL

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This paper reports our accumulated experience with chloramphenicol (chloromycetin®) in the treatment of pertussis during a severe epidemic which occurred during the months of July to October in Bolivia. The majority of these cases were in the department of Cochabamba. Pertussis in this region is of high virulence, with the death rate among children approaching double that encountered in North America. This high death rate does not seem to be influenced by the wide variation of altitude and climate of Bolivia and is influenced little by the social level of the patients.

EPIDEMIOLOGIC DATA

During the period of this study the following facts were established regarding the epidemic:

Untreated young children (first 5 years) were found to have a moderate to high temperature (37.5 to 39.5 C., 99.5 to 103.1 F.) for a period of usually two weeks during the early stage of the disease, and the paroxysmal stage averaged more than six weeks. The death rate of untreated patients under 5 years of age was 20 per cent.

Treatment with high potency vitamins gave some amelioration but no curative effect. Penicillin and streptomycin were of some aid in controlling the complications but were of doubtful value in shortening the disease. Prior to the use of chloramphenicol, fair results were obtained in some cases by painting the throat with iodine preparations.

Early laboratory work of Smith and associates [1] indicated the possible usefulness of chloramphenicol in pertussis. This work was confirmed by McLean and co-workers [2] and Sarber and Hemans.[3] Alexander, Leidy and Redman [4] found the effectiveness of chloramphenicol against Hemophilus pertussis and Hemophilus parapertussis in vitro to be high when compared with the other antibiotics studied.

Degenhardt [5] reported the case of a child aged 5½ months who had severe pertussis successfully treated with chloramphenicol.

METHOD OF STUDY

Since the supply of chloramphenicol was limited and there was such a large number of patients, only those who were seriously ill were treated with the drug. The diagnosis was confirmed by cough plate or swab cultures. All patients under 5 years of age, and most of those above this age, had fever.

Fifty cases are included in this report. Chloramphenicol was given in varying doses (see the accompanying table) depending on the weight of the child, and was administered by mouth in most cases. In certain patients, as indicated, the drug was given as a rectal suppository or as an intravenous injection dissolved in propylene glycol.

REPORT OF CASES

Seven brief case records are included as typical examples of results.

CASE 1.—A boy 2 months of age, receiving artificial feeding and appearing well nourished, had been ill with pertussis for five days, during which time he was treated with ascorbic acid (vitamin C) and vitamin K without beneficial results. The paroxysmal stage had begun with twenty to thirty paroxysms per day and fever (38 C., 100.4 F.).

Chloramphenicol, first dose 0.25 Gm., followed by doses of 0.125 Gm. every eight hours, was given. On the second day fever had disappeared and the paroxysms greatly decreased. Improvement continued. On the fourth day, the paroxysms had disappeared and the patient appeared cured. Some coughing remained, but only of a light irritant type. Two weeks later the patient had had no relapses and appeared to be in excellent health. The total dose was 1.75 Gm. of chloramphenicol, given orally.

CASE 2.—A girl 3 months of age, bottle fed and fairly well nourished, had low grade fever (less than 38 C., 100.4 F.). This patient was in the earliest paroxysmal stage, with paroxysms averaging twenty-five per day. Treatment with chloramphenicol was begun, 0.25 Gm. for the first dose and 0.125 Gm. every six hours around the clock. On the second day

Patients with Pertussis Treated with Chloramphenicol

Age Groups	No. Pts.	1st Dose (Gm.)	Maintenance (Gm.)	Total Dose (Gm.)	Results: Recovering Hrs.	Results: Free of Symptoms Days
Less than 6 mo.	13	0.25	0.125 t.i.d.	1.5	48	4
		0.25	0.125 q.i.d.	2.0	24	4
		0.25	0.125 q.i.d.	2.0	24	3
		0.25	0.125 t.i.d.	2.0	48	3
		0.25	0.125 t.i.d.	2.25	36	3
		0.25*	0.25 b.i.d.*	1.75	24	4
		0.25	0.125 t.i.d.	2.0	48	3
		0.25	0.125 q.i.d.	2.0	36	3
		0.25	0.125 q.i.d.	2.25	48	3
		0.25	0.125 t.i.d.	2.25	72	4
		0.25	0.125 t.i.d.	2.00	48	4
		0.25*	0.25 b.i.d.*	1.75	24	3
		0.25*	0.25 b.i.d.*	1.75	24	4
1 yr.	8	0.25*	0.25 b.i.d.*	2.0	48	4
		0.25*	0.25 b.i.d.*	2.50	48	4
		0.25*	0.25 b.i.d.*	2.0	48	5
		0.25	0.25 t.i.d.	2.0	24	3
		0.25	0.25 t.i.d.	2.0	24	3
		0.25	0.25 t.i.d.	2.25	24	3
		0.25	0.25 t.i.d.	2.25	48	4
		0.25	0.25 t.i.d.	2.00	24	4
2 yr.	10	0.25	0.25 t.i.d.	2.50	72	5
		0.25	0.25 t.i.d.	2.0	72	6
		0.25	0.25 t.i.d.	2.25	48	3
		0.25	0.25 t.i.d.	2.50	48	4
		0.25	0.25 t.i.d.	2.00	48	6
		0.25	0.25 t.i.d.	2.00	24	4
		0.25	0.25 t.i.d.	2.50	48	4
		0.25	0.25 t.i.d.	2.50	48	4
		0.25	0.25 t.i.d.	2.25	48	5
		0.25	0.25 t.i.d.	2.25	48	4
3 yr.	1	0.25	0.25 t.i.d.	2.0	48	3
4 yr.	6	0.25	0.25 t.i.d.	3.0	48	4
		0.25	0.25 t.i.d.	2.75	48	3
		0.25	0.25 t.i.d.	3.00	72	4
		0.25	0.25 t.i.d.	3.00	48	4
		0.25	0.25 t.i.d.	3.25	48	5
		0.25	0.25 t.i.d.	3.00	72	4
5 to 9 yr.	10	0.50	0.25 q.i.d.	4.5	72	5
		0.25	0.25 t.i.d.	3.0	72	6
		0.25	0.25 t.i.d.	3.25	48	4
		0.25	0.25 q.i.d.	4.00	72	5
		0.25	0.25 q.i.d.	4.25	48	4
		0.30 I.V.	0.30 q. 4 hr. I.V.	3.00 I.V.	48	4
		0.30 I.V.	0.30 q. 4 hr. I.V.	3.00 I.V.	48	4
		0.30 I.V.	0.30 q. 3 hr. I.V.	2.40 I.V.	48	4
		0.30 I.V.	0.30 q. 5 hr. I.V.	3.0 I.V.	48	4
		0.30 I.V.	0.30 q. 5 hr. I.V.	3.0 I.V.	48	4

* Rectal suppository.

From the Department of Clinical Investigation, Parke, Davis and Company (Dr. Payne), and Chief Medical Officer, Inter-American Coprorate Service of Public Health, Cochabamba, Bolivia (Dr. Levy).

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the temperature returned to normal. By the fourth day the paroxysms had almost disappeared. During the night of the fourth day the patient had two small paroxysms. On the fifth day there were no paroxysms. Follow-up indicates that the patient is free of pertussis and has had no further paroxysms. The total dose was 2.5 Gm. chloramphenicol, given orally.

CASE 3.—A girl 3 months of age, breast fed, contracted pertussis from her mother. The catarrhal stage was severe, with temperature ranging between 38 and 39 C. (100.4 and 102.2 F.), and symptoms resembling bronchial pneumonia. The first dose of 0.25 Gm. chloramphenicol was followed by doses of 0.125 Gm. every six hours around the clock. On the second day the temperature became normal during the day and the patient appeared much improved. By the fourth day paroxysms were greatly reduced, with a great improvement in the general condition of the patient. The paroxysms had disappeared on the fifth day, and there was no indication of a relapse during the several weeks of follow-up. This patient had symptoms of nausea when given chloramphenicol mixed with fruit juice, evidently because of the objectionable taste. The total dose was 2 Gm. of the antibiotic given orally.

CASE 4.—A girl 2 years of age and well nourished was in the early stage of paroxysms. She had low grade fever and paroxysms numbering between twenty and thirty per day. Chloramphenicol was administered, 0.25 Gm. for the first dose and 0.25 Gm. every eight hours around the clock. On the second day the temperature was normal and there were signs of general physical improvement. On the fourth day the paroxysms had disappeared, and the patient made an uneventful recovery. The total dose of the drug was 2.5 Gm. given orally.

CASE 5.—A girl 6 years of age, well nourished, was beginning the paroxysmal stage of pertussis, with twenty paroxysms per day. Chloramphenicol was given intravenously, 0.3 Gm. in propylene glycol administered every three hours. On the second day the patient had four paroxysms. After the fourth post-treatment day the patient was in uneventful convalescence. The total intravenous dose was 3 Gm. chloramphenicol.

CASE 6.—A girl 7 years of age, well nourished, began treatment during the first week of the paroxysmal stage of pertussis, while she was having twenty to thirty paroxysms per day and frequent epistaxis.

Chloramphenicol, 0.3 Gm. dissolved in propylene glycol, was administered intravenously every five hours for the first forty-eight hours. By the third day epistaxis had disappeared and the number and intensity of the paroxysms had diminished. On the fourth day the paroxysms disappeared, and the patient made an uneventful recovery. The total dose was 3 Gm. chloramphenicol, given intravenously.

CASE 7.—A girl 8 years of age and poorly nourished was extremely weak because of the thirty to fifty paroxysms per day she had suffered and the vomiting which accompanied each paroxysm. Treatment was given intravenously with chloramphenicol, 0.3 Gm. every five hours for ten doses. On the second day improvement was noticed in the patient's physical condition. Paroxysms disappeared on the fourth day, and the patient began an uneventful convalescence. The total dose was 3 Gm. chloramphenicol given intravenously.

COMMENT

Fever, when present, disappeared during the second day of treatment, and a definite decrease in the number of paroxysms could be observed on the third day.

Paroxysms decreased in number until they disappeared completely. The time of disappearance varied from the third to sixth day after treatment was instituted. However, it was noted that a light cough remained for several days. This was thought to be due to the residual inflammation in the tissues.

In 1 case there appeared to be a relapse of short duration a few days after treatmeant was discontinued. This patient received a small dose of chloramphenicol, and it was judged to be inadequate.

Spot check of patients by cough plate one week after treatment indicated that all were free of infection. In a few children under 6 months of age there were mild symptoms of nausea. The capsuls containing the drug were opened and the contents mixed wtih substances such as honey or orange juice for administration, and the resulting disagreeable taste may have caused the symptoms.

It was decided that the dose of drug used was the minimum amount that would be effective.

CONCLUSION

1. Chloramphenicol (chloromycetin®) is effective in the treatment of pertussis.

2. When the antibiotic is administered as a rectal suppository or intravenously, the results are equal to those with oral medication.

3. Untoward reactions to chloramphenicol appear to be negligible.

Council on Foods and Nutrition

REPORT OF THE COUNCIL

The following products have been accepted as conforming to the rules of the Council. JAMES R. WILSON, M.D., *Secretary.*

The Beech-Nut Packing Company, Canajoharie, N. Y.

BEECH-NUT JUNIOR PINEAPPLE PUDDING consists of whole milk, crushed unsweetened pineapple, sugar, white rice, frozen whole eggs, enriched farina, salt and sufficient water to prepare.

Analysis (submitted by manufacturer).—Total solids 23.57%, moisture 76.43%, ash 0.66%, fat (ether extract) 1.07%, protein (N × 6.25) 1.77%, crude fiber 0.15% and carbohydrates other than crude fiber (by difference) 19.92%.

Calories.—0.96 per gram; 27.2 per ounce.

Vitamins and Minerals

	Per Hundred Grams
Vitamin A	118 U.S.P. Units
Thiamine	0.032 mg.
Ascorbic acid	0.96 mg.
Riboflavin	0.057 mg.
Nicotinic acid	0.29 mg.
Calcium	41.0 mg.
Phosphorus	43.0 mg.
Iron	0.23 mg.
Copper	0.10 mg.

Use.—For use in the feeding of older infants and young children.

The Beech-Nut Packing Company, Canajoharie, N. Y.

BEECH-NUT JUNIOR PEARS AND APPLES consist of pears, apples, sugar and sufficient water to prepare.

Analysis (submitted by manufacturer).—Total solids 18.78%, moisture 81.22%, ash 0.28%, fat (ether extract) 0.72%, protein (N × 6.25) 0.31%, crude fiber 1.14% and carbohydrates other than crude fiber (by difference) 16.33%.

Calories.—0.73 per gram; 20.7 per ounce.

Vitamins and Minerals

	Per Hundred Grams
Thiamine	0.012 mg.
Riboflavin	0.034 mg.
Nicotinic acid	0.16 mg.
Ascorbic acid	0.57 mg.
Calcium	26.0 mg.
Phosphorus	10.0 mg.
Iron	0.255 mg.
Copper	0.164 mg.

Use.—For use in the feeding of older infants and young children.

The Beech-Nut Packing Company, Canajoharie, N. Y.

BEECH-NUT STRAINED PEARS AND APPLES consist of pears, apples, sugar, and sufficient water to prepare.

Analysis (submitted by manufacturer).—Total solids 18.50%, moisture 81.50%, ash 0.27%, fat (ether extract) 0.69%, protein (N × 6.25) 0.33%, crude fiber 0.61% and carbohydrates other than crude fiber (by difference) 16.60%.

Calories.—0.74 per gram; 21.0 per ounce.

Vitamins and Minerals

	Per Hundred Grams
Thiamine	0.012 mg.
Riboflavin	0.027 mg.
Nicotinic acid	0.13 mg.
Ascorbic acid	0.68 mg.
Calcium	25.0 mg.
Phosphorus	17.0 mg.
Iron	0.356 mg.
Copper	0.127 mg.

Use.—For use in the feeding of infants, convalescents and others requiring a soft diet.

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SATURDAY, DECEMBER 31, 1949

MADUROMYCOSIS IN NORTH AMERICA

Maduromycosis, or madura foot, is a fungus disease which was first described by Van Dyke Carter as an endemic infection in and around Madura in India. The disease has since been recognized in other districts of India and in Ceylon, Cochin China, the Netherland East Indies, Africa, Argentina, Cuba, Mexico, the United States and Canada. It occurs most often in arid tropical and subtropical climates among men who do agricultural work with bare feet. Unlike actinomycosis, which is most frequently found in cattle and swine, maduromycosis is apparently confined to man. The disease is rare in women. Infection commonly follows pricking with thorns. While the infection in actinomycosis is transmissible from one part of the body to other parts, maduromycosis remains localized in the area originally involved. The disease most often affects the foot. Occasionally it occurs in the region of the buttocks, the thigh, the knee and the ankle and, apparently most rarely of all, the hand. In a review of the literature to May 1941, Symmers and Sporer [1] found reports of 38 cases of maduromycosis in the United States. Since then 18 additional cases have been reported in North America. The hand was affected in only 3 of these cases: 2 in the United States, and 1 in Mexico.[2] In one instance of maduromycosis of the hand, the patient had never been out of New York City.

Twenty-two species of fungi belonging to ten genera and four families have been implicated in the production of various types of maduromycosis. In spite of this multiplicity of causes, the different types clinically may resemble one another closely. Clinically, cases of maduromycosis may be divided into three groups: In one group the changes are confined to superficial structures in the form of granulomatous lesions of the skin or of the skin and subcutaneous tissues; in the second group there are one or more fibrous, fatty or, occasionally, cystic nodules without ulceration of the overlying skin; in the third and commonest group, the lesions are present as multiple subcutaneous nodules which are movable, painless and nontender. Spontaneously, or sometimes as the result of injury, the nodules rupture and discharge mucopurulent material containing white, yellow or black granules, the color of the granules depending on the type of fungus concerned, the white or yellow varieties apparently prevailing. In the case of maduromycosis of the hand recorded by Symmers and Sporer in 1944, Symmers later isolated a black grain fungus which was identified by Emmons,[3] who placed it in the genus Phialophora; the fungus is called Phialophora jeanselmei. According to the experiments of Symmers,[4] subcutaneous injection of this fungus in rabbits produces solitary, nonulcerated nodules which histologically are specific and comparable to the nodules of that form of maduromycosis in man which is caused by the same fungus.

Because of recent military activities in India, Burma and in other localities where maduromycosis is prevalent, it is to be expected that numbers of men returning to the United States will be invalided with this disease. Physicians should be on the alert for its appearance in this country and other countries where it has been heretofore almost unknown. It seems that drugs such as the sulfonamides, penicillin and aureomycin have not thus far been used in the treatment of maduromycosis. However, encouraging results have been obtained with the use of large doses of iodides. If, on the other hand, the disease is recognized sufficiently early, curettage or even excision of individual nodules as they arise may be undertaken to remove all of the diseased tissue. In the later stages, more especially if bone is penetrated, amputation is advocated by those who have had the most experience with treatment of this disease. The increasing prevalence of maduromycosis emphasizes once again the constantly changing picture in medical diseases and serves as another example of the need for constant alertness to new health problems.

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CELLULAR TRANSFER OF TUBERCULIN HYPERSENSITIVITY

It was shown by Chase,[1] Cummings[2] and others[3] that acquired tuberculin hypersensitivity in guinea pigs cannot be transferred to normal animals by intradermal injection of serum from a hypersensitive donor. Successful transfer, however, is possible by intracutaneous injection of leukocytes isolated from peritoneal exudates of the same donor. It was concluded from this that cells, rather than serum antibodies, are the prime mediators of tuberculin type hypersensitivity.

To determine whether the same cellular transfer is possible in man Lawrence of Bellevue Hospital, New York City,[4] isolated viable leukocytes from the venous blood of tuberculin-positive and tuberculin-negative patients. He injected suspensions of these leukocytes intradermally into the flexor surface of the forearms of tuberculin-negative volunteers. After an interval of eighteen to forty-eight hours the reaction at the site of the injection was made by an intradermal injection of 0.1 cc. of old tuberculin.

To obtain the leukocytes 10 cc. of venous blood was drawn into a sterile potato tube containing 0.4 cc. of a heparin solution, 100 mg. per hundred cubic centimeters. One cubic centimeter of bovine fibrinogen solution was then added according to the technic of Minor and Burnett.[5] The fibrinogen accelerates the rate of erythrocyte sedimentation, leaving a plasma suspension of leukocytes in the supernatant fluid. From this suspension 0.025 cc. of packed leukocytes was obtained by centrifugation. The leukocytes were washed twice and afterward suspended either in Tyrode's solution or in freshly drawn serum from the prospective tuberculin-negative volunteer. The interval between the withdrawal of blood and injection into the recipient was usually not more than six hours.

When the leukocytes were obtained from tuberculin-negative donors, cutaneous hypersensitivity to tuberculin did not develop in any of the tuberculin-negative recipients. Leukocytes obtained from tuberculin-positive donors, however, when injected into tuberculin-negative recipients led in practically all cases to 2 plus to 4 plus local tuberculin reactions. The severity of the local reaction seemed to bear a relationship to the dosage of the injected leukocytes and to the degree of sensitivity of the leukocyte donor. In some cases the acquired hypersensitivity persisted for as long as three months.

These observations are in agreement with those previously recorded for guinea pigs. An adequate theory of the mechanism of this cellular transfer thus far has not been proposed.

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Current Comment

FREE MEDICINE? NOT IN ENGLAND

Although Great Britain's National Health Service Act has been ballyhooed as a source of "free medicine" for those in Great Britain and practically all visitors, a tremendous financial toll already has been exacted. In fact, the cost has far exceeded the original amount set aside for the provisions of this act. It was inevitable that sooner or later someone would have to admit that "free" medicine per se is impossible and that such a scheme as was proposed under the National Health Service Act is an expensive procedure for which the public must pay sooner or later. One of the features of this plan was the provision of medicines without charge. However, Health Minister Aneurin Bevan has had to admit that economy is necessary and that patients must from now on pay for part of their prescriptions. All except old age pensioners must pay the first shilling (14 cents) on all prescriptions. If the amount of the prescription is less than a shilling, the patient must pay the full price for the prescription. The charge is said to be intended to lessen abuse of the Health Service by patients who visit physicians for trivial ailments. During the first year of enforcement of the National Health Service Act 187,000,000 prescriptions are reported to have been dispensed. Mr. Bevan is reported to believe that other economies can be achieved by standardizing drugs and other medical supplies. Such "standardization" would mean, of course, further limitation for the patient and the physician; not only would the best possible medical service then be limited, as has been observed under the act during its first year of enforcement, but remedies would be limited to those in a "standardized" list. Apparently, the so-called social planners seem to regard physicians as automatons and patients as gadgets with standard equipment produced on a production line. This recent decision to remove "free" medicine from the list of services provided "without charge" under the National Health Service Act in Great Britain indicates the vagaries of nationalizing by government decree and recalls a letter in the correspondence section of a comparatively recent issue of the *British Medical Journal*.[1] The correspondent, who is what would be regarded in this country as a specialist, concluded, on the basis of his standing and remuneration, that he in his special field was worth about 80 pounds per annum and that a porter was worth more than three times, a female cook almost three times and a kitchen maid and cleaner about two and a half times this amount. It is obvious that when health services are reduced primarily to terms of financial juggling, bizarre situations will arise. If these could be regarded humorously, little harm would result. Unfortunately, one cannot regard humorously anything which serves as a detriment to advancing the best possible health interests of a nation.

1. Brit. M. J. **2**: 49 (July 16) 1949.

EFFECT OF FLUORIDES ON DENTAL CARIES

Knutson and his associates [1] reported in a series of articles the over-all effect of topically applied fluorides on dental caries in the permanent teeth of children. These studies indicated that a series of four topical applications of a 2 per cent solution of sodium fluoride, preceded by dental cleansing, effected a 40 per cent reduction in dental caries incidence. More than four applications did not increase the caries-prophylactic effect. The caries-inhibiting value of topically applied sodium fluoride was not appreciably decreased during a three year period following treatment. The omission of dental cleansing prior to a series of applications reduced the effectiveness of the fluoride applications by about one half. Application of a saturated solution of lead fluoride (0.06 per cent) was not associated with a significant reduction in the incidence of caries. The application of a 2 per cent solution of sodium fluoride to the teeth, followed immediately by a 5 per cent solution of calcium chloride, did not increase the caries-prophylactic effect accomplished by the use of a solution of sodium fluoride alone. An increase in the time interval between applications of the fluoride solution from one or two a week to one each three to six months decreased the caries-prophylactic effect. A concentration of 1 per cent solution of sodium fluoride appears to be equally as effective in inhibiting new dental caries as a 2 per cent solution. The incidence of dental caries in fluoride-treated permanent teeth of 1,032 children compared with untreated teeth were now analyzed separately for each tooth type and tooth surface. The over-all reduction in newly carious teeth in fluoride-treated as compared with untreated teeth was 40.3 per cent, 42.3 per cent for teeth in upper mouth quadrants and 37.4 per cent for teeth in lower mouth quadrants. Among teeth in upper mouth quadrants, except central incisors and cuspids, the reductions varied from 34.7 per cent for first molars to 50.9 per cent for second bicuspids. Among teeth in lower mouth quadrants, except incisors and cuspids, the reductions varied from 22.2 per cent for first molars to 52 per cent for first bicuspids. The over-all reduction in newly carious tooth surfaces in fluoride-treated as compared with untreated teeth averaged 37.9 per cent, 40.6 per cent in upper mouth quadrants and 34.1 per cent in lower mouth quadrants. For upper teeth alone, the reduction in new decay on distal surfaces exceeded that on occlusal surfaces, while mesial surface decay was lowered as the result of fluoride applications by 41 per cent. Comparison of the distribution of the number of newly carious teeth in treated and untreated mouth halves and the theoretical distribution calculated by applying a 40 per cent reduction to the number of carious teeth observed in each untreated mouth half indicates that the caries-prophylactic effect of topical sodium fluoride is remarkably uniform for individual children.

1. Knutson, J. W., and Scholz, G. C.: The Effect of Topically Applied Fluorides on Dental Caries Experience: VII. Consolidated Report of Findings for Four Study Groups, Showing Reduction in New Decay by Individual Tooth and by Tooth Surface, and Frequency Distribution of Newly Decayed Teeth in Treated and Untreated Mouth Halves, Pub. Health Rep. **64**: 1403 (Nov. 11) 1949.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Elsewhere in this issue appears the Council on Medical Education and Hospitals' program for the Forty-Sixth Annual Congress on Medical Education and Licensure to be held at the Palmer House, Chicago, Feb. 5-7, 1950. The program includes three round-table discussions and a series of timely papers. The round-table discussion of the place of the specialties in undergraduate medical education will be of particular interest to medical educators. Distinguished representatives from the various specialties will participate in the round table. Their statements will be supplemented by general discussion from the floor. Round-table discussions will also be held on the methods of examining candidates for certification by the American boards and on the present status of medical education in a number of foreign countries. Formal papers will be presented on the survey of medical education, the location of a medical school, medical education in Great Britain, the resettlement of displaced physicians and the role of a profession in promoting educational standards. A special block of rooms is being held at the Palmer House for those planning to attend the congress. Reservations should be made directly with the hotel at the earliest possible date.

GASTRIC HYDROCHLORIC ACID

The fluid secreted by the parietal cells of the gastric glands is a slightly hypertonic solution of virtually pure hydrochloric acid with a titratable acidity of about 0.17 normal and a p_H of 0.87.[1] It contains little, if any, ash or organic solids and the composition is independent of the rate of formation, the intensity of stimulus and, probably, the nature of the stimulating agent. The acidity of the gastric juice as ordinarily determined in withdrawn specimens results from the buffering of the original secretion by inorganic salts and protein from foods and elsewhere. Despite much investigation in the clinic and laboratory, the mechanism of elaboration of the gastric acid has not been determined. It has recently been suggested [2] that part of the hydrogen removed from metabolites of fat or carbohydrates in the gastric cell appears as the hydrogen ion of the gastric hydrochloric acid and the remainder is removed through the intervention of oxidized nicotinic acid amide and the flavoprotein-cytochrome system of oxidizing enzymes in the gastric cell. The resultant water is combined with carbon dioxide under the influence of carbonic anhydrase to form bicarbonate, which is returned to the blood, thus augmenting the alkalinity of gastric venous blood. This scheme appears to account for the chemical and electrical changes observed during secretion and rest on demonstrated nutritional, chemical and physical concepts.

1. Holander, F.: Science **110**: 37, 1949.
2. Patterson, W. B., and Stettin, De W., Jr.: Science **109**: 1949.

ORGANIZATION SECTION

PROCEEDINGS OF THE WASHINGTON SESSION

MINUTES OF THE CLINICAL SESSION OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION, HELD IN WASHINGTON, D. C., DECEMBER 6–9, 1949

HOUSE OF DELEGATES

Second Meeting—Thursday Morning, December 8 Continued

Report of Reference Committee on Amendments to the Constitution and By-Laws

Dr. Floyd S. Winslow, Chairman, presented the following report:

1. Address of Speaker: Your reference committee had referred to it the portion of the Speaker's address relating to the establishment of a standing Reference Committee on Insurance and Medical Service. Your Committee recommends amending the By-Laws, Division Three, Chapter X—Committees of the House of Delegates, Sec. 5. Reference Committees (*D*):

Change (12) (Miscellaneous Business) to (13).

Insert after (12) the following: "Insurance and Medical Service, to which shall be referred matters pertaining to insurance and medical service."

2. Resolution on Establishment of Annual Dues for Active Membership: Your reference committee had referred to it a resolution from the State Medical Society of Wisconsin relating to the establishment of annual dues for membership within the American Medical Association. Since this matter will be taken up in connection with the recommendation from the Board of Trustees, the Committee feels that no action need be taken on this resolution.

3. Resolution on General Officers Eligible for Election as President-Elect: Your reference committee had referred to it a resolution presented by Dr. Mather Pfeiffenberger, Illinois, referring to general officers eligible for election as President-Elect. Inasmuch as this House of Delegates heard and discussed recommendations of the Committee on Revision of the Constitution and By-Laws over a period of two years and, finally, at the annual session of the American Medical Association in June 1948, adopted the Constitution and By-Laws in its present form, this Committee recommends that this resolution be not adopted.

4. Changes in Constitution and By-Laws Laid Over from Atlantic City Session: This proposed amendment was approved by the House of Delegates at the June 1949 session. The committee therefore recommends the adoption of the following amendments to the Constitution and By-Laws:

Change in Constitution: Article 6, Sec. 2. Insert after "the United States Navy" the words "the United States Air Force."

Change in By-Laws: Division Two, Chapter IV, Sec. 2 (*A*), paragraph (2) Service Fellows. Insert after "the United States Navy" the words "the United States Air Force." (Amended thus at Atlantic City Session in June. See Proceedings Atlantic City Session, 1949, p. 50.)

Division Three, Chapter IX, Section 1, paragraph (B), insert after "the United States Navy" the words "the United States Air Force."

5. Amendment to Division Three, Chapter XII, Sec. 6 (*A*): Your Reference Committee approves the recommendation of the Secretary and General Manager to restore the original wording of the By-Laws, namely, Division Three, Chapter XII, Sec. 6 (*A*) as suggested in the Handbook.

6. Amendment to By-Laws, Division One, Chapter II: Your reference committee had referred to it a recommendation from the Board of Trustees which reads as follows:

Tenure and Obligations of Membership. Dues

Section 1. TENURE AND OBLIGATION OF MEMBERSHIP—When the Secretary is officially informed that a member is not in good standing in his component society he shall remove the name of said member from the membership roll. A member shall hold his membership through the constituent association in the jurisdiction of which he practices. Should he remove his practice to another jurisdiction, he shall apply for membership through the constituent association in the jurisdiction to which he has moved his practice. Unless he has transferred his membership within six months after such change of practice, the Secretary shall remove his name from the roster of members.

Section 2. DUES.—Annual dues, not to exceed $25, may be prescribed for the ensuing calendar year in an amount recommended by the Board of Trustees and approved by the House of Delegates. Each active member shall pay said annual dues to his constituent association for transmittal to the Secretary of the American Medical Association.

An active member who is delinquent in the dues for one year shall forfeit his active membership if he fails to pay the delinquent dues within thirty days after notice of his delinquency has been mailed by the Secretary to his last known address.

Your Reference Committee recommends the following additions to this proposed amendment:

First, Section 2, second paragraph, add the words "in the American Medical Association" after the word "membership," so that this sentence will read: "An active member who is delinquent in the payment of such dues for one year shall forfeit his active membership in the American Medical Association if he fails to pay the delinquent dues within thirty days after notice of his delinquency has been mailed by the Secretary to his last known address."

Second, because this recommendation contains no provision for reinstatement of members delinquent in the payment of dues, your committee recommends the following addition: "Any former member who has forfeited his membership because of being delinquent in payment of dues may be reinstated on payment of his indebtedness."

The responsibilities of the American Medical Association are increasing constantly and the revenues of its publications can no longer meet the costs of its broadening program. The American Medical Association recognizes the greatly augmented activities of the constituent associations and of the component societies. However, it is aware of its own responsibility in providing agressive, effective leadership for the medical profession on a national level. This leadership includes constructive assistance in building and improving the many splendid voluntary health insurance systems, so that all who desire or need prepaid medical care may be provided with it, without political controls or compulsion.

The American Medical Association, like other great national organizations, must depend on dues from its membership to sup-

port its growing program of service, both to the profession and to the public.

Your reference committee approves of the recommendation of the Board of Trustees pertaining to the dues of active members with the additions recommended by this committee, and would call your attention to the fact that the recommendation of the Board of Trustees has come in response to action taken by this House of Delegates at its meeting in June 1949.

Respectfully submitted,

FLOYD S. WINSLOW, Chairman
B. E. PICKETT, SR.
KARL S. J. HOHLEN
ALFRED S. GIORDANO
H. RUSSELL BROWN

Dr. Winslow moved adoption of the report of the reference committee creating a new reference committee and the motion was seconded regularly and carried, and the Speaker declared the By-Laws amended accordingly.

Dr. Winslow moved adoption of the report of the reference committee recommending that the Resolution on General Officers Eligible for Election as President-Elect be not adopted. The motion was regularly seconded and carried.

It was moved by Dr. Winslow that the section of the report of the reference committee recommending the changes in the Constitution and By-Laws laid over from the Atlantic City Session be adopted. The motion was seconded by Dr. George E. Armstrong, United States Army, Dr. Joel T. Boone, United States Navy and others and carried, and the Speaker announced that the By-Laws had been amended accordingly.

Dr. Winslow moved adoption of the report of the reference committee amending Division One, Chapter II and the motion was duly seconded and carried after discussion and amendment so that the chapter now reads:

CHAPTER II. TENURE AND OBLIGATIONS OF MEMBERSHIP; DUES

Section 1.—TENURE AND OBLIGATIONS OF MEMBERSHIP.—When the Secretary of the American Medical Association is officially informed that a member is not in good standing in his component society he shall remove the name of said member from the membership roll. A member shall hold his membership through the constituent association in the jurisdiction of which he practices. Should he remove his practice to another jurisdiction he shall apply for membership through the constituent association in the jurisdiction to which he has moved his practice. Unless he has transferred his membership within six months after such change of practice, the Secretary of the American Medical Association shall remove his name from the roster of members.

Sec. 2. Dues.—Annual dues, not to exceed $25, may be prescribed for the ensuing calendar year in an amount recommended by the Board of Trustees and approved by the House of Delegates. Each active member shall pay said annual dues to his constituent association for transmittal to the Secretary of the American Medical Association.

An active member who is delinquent in the payment of such dues for one year shall forfeit his active membership in the American Medical Association if he fails to pay the delinquent dues within thirty days after notice of his delinquency has been mailed by the Secretary of the American Medical Association to his last known address.

Report of Board of Trustees

Dr. Louis H. Bauer, Chairman, Board of Trustees, presented the following report:

Mr. Speaker, Dr. Lull asked me to state, in reference to the method of collecting the American Medical Association membership dues, that he could work out all the details with the state societies to avoid any mechanical defects in the collection of these dues. The Board feels that it is highly essential that the collection of dues be done at the lower level; otherwise, it could never be effective.

The Board of Trustees has authorized me to recommend to the House of Delegates, now that these amendments to the By-Laws have been adopted, that the dues for 1950 be assessed at $25.

It was moved by Dr. John W. Cline, California, and seconded by others that the recommendation of the Board of Trustees setting the dues for 1950 at $25 per member be adopted. The motion was carried after discussion.

A motion of Dr. William D. Stovall, Wisconsin, duly seconded, to reconsider the motion was lost.

Report of Reference Committee on Reports of Officers

The Vice Speaker assumed the Chair.

Dr. Charles H. Phifer, Chairman, presented the following report, which on motions of Dr. Phifer, duly seconded and carried, was adopted section by section and as a whole:

1. Speaker's Address: Your reference committee commends to you the excellent address of your Speaker, Dr. Borzell. His dignified, democratic and impartial parliamentary procedures, as well as his words of solicitude in behalf of the delegates to attend all meetings of the House and the reference committees, have greatly helped to simplify and properly adjudicate the many important problems that come before the House of Delegates, thereby helping American medicine to define and formulate sound fundamental principles which are necessary to insure the best medical care that can be rendered to the American people.

Your reference committee also concurs in his recommendation that there be no Council meetings held on Wednesday and that the day be given over to the hearings of reference committees.

2. Report of the Judicial Council: The report of the Judicial Council presented by its Chairman, Dr. Cunniffe, shows the great amount of work done by this Council. Its revision of our Principles of Medical Ethics is a masterful interpretation of American medical philosophy.

The Judicial Council has wisely adjudicated the many questions presented to it. Perhaps its most useful work has been the prevention of trouble, by its patient consideration and wise counsel, in the clarification of the Constitution and By-Laws and the Principles of Medical Ethics.

Your committee recommends that all parties concerned with controversial questions consult with the Judicial Council more frequently and thus prevent errors in judicial procedure.

3. President's Address: The inspiring, logical address of our President, Dr. Irons, in the opinion of this reference committee is a brief and perfect report on the objectives and incentives which guide the American people and the medical profession in their common fight against the desires of the social planners. The American Medical Association is fortunate to have Dr. Irons as a leader of the profession at this time of great decision. Dr. Irons has conducted this fight with the dignity which is expected of a man of his integrity and high professional attainments. This House of Delegates and the entire medical profession are forever indebted to him for giving so freely of his time and energy in our behalf. The reference committee draws your attention particularly to that portion of Dr. Irons' address dealing with the experience of the British social government. Dr. Irons rightfully points out that there can be no compromise between the attitude of the social planners and the freedom of the American people. In this crisis we cannot delegate our individual responsibility to others than ourselves. The physicians of this country have been traditionally devoted to the practice of medicine for all the people, without any bureaucratic interference. Hitherto they have been concerned with the quality of individual medical care, but are now faced with the spectacle of government interference between physician and patient.

Dr. Irons' greatest contribution has been his crusade to present these facts to the people, so that they may judge intelligently the merits and demerits of government medicine. In this he has been eminently successful. Your committee commends to you his warning of the national trend of the social planners towards the welfare state in this country and the fact that far too many people fail to visualize what is taking place or the effect of such on our activities. Your committee greatly regrets that there are a few misguided members of the medical pro-

fession who are in accord with this movement. Your reference committee recommends a careful study of this address to each member of the House of Delegates and all the members of the medical profession. We should each remember that this is not just a fight for the preservation of medical freedom; it is fundamentally a fight for American freedom and world freedom. This cause demands the support of every American.

Respectfully submitted,

CHARLES H. PHIFER, Chairman
HAROLD B. GARDNER
ROBERT B. HOMAN JR.
ALLEN H. BUNCE
ROBERTSON WARD

Report of Reference Committee on Industrial Health

Dr. Donald Cass, Chairman, presented the following report, which was adopted on motion of Dr. Cass, regularly seconded and carried:

The report of the Council on Industrial Health indicates the enormous extent to which its activities have increased and the thorough understanding the Council has of the new problems which have developed with increased public interest in industrial medicine and accident prevention.

Your committee recommends that the Board of Trustees be requested to authorize the formation of the proposed Joint Committee for the Advancement of Health in Industry and the adoption of the proposed Articles of Agreement presented in the report.

The increased activities of the Council in its helpful contact with state committees on industrial practice are to be commended and the Council should be instructed to continue and enlarge this type of activity.

Standing orders for nurses in industry is still a problem difficult to solve because of the differences in laws governing industrial nursing in the various states. However, your committee recommends that the Council continue its investigations in cooperation with representatives of state associations to try to find a solution to this phase of industrial health, recognizing that nurses in industry play a very important part in industrial health, accident prevention and personal and plant hygiene.

Your committee commends the Council for its activity in working with the federal government, the National Safety Council and other agencies in accident prevention and recommends that this good work be continued.

It is gratifying to your committee that our Council on Industrial Health is so keenly aware of the trend for greater welfare benefits in labor relations and is taking such energetic, intelligent action as in liaison with Industrial Accident Boards, American Bar Association and with our Council on Medical Service and Council on Physical Medicine and Rehabilitation.

Respectfully submitted,

DONALD CASS, Chairman
HOMER L. PEARSON JR.
WILLIS H. HURON
WALTER E. VEST
EARLE M. CHAPMAN

Report of Reference Committee on Miscellaneous Business

Dr. L. S. McKittrick, Chairman, presented the following report, the first six sections of which were adopted section by section and the seventh section not adopted, all on motions of Dr. McKittrick, duly seconded and carried:

1. Resolution on Constituent State Medical Associations Establishing Grievance Committees: Your reference committee approves this resolution and recommends its adoption.

2. Resolution on Compensation for Trustees and General Officers: Your reference committee has given careful thought to this resolution and has sought guidance outside of the committee before formulating its opinion. It is completely sympathetic with the intent of the resolution. It is aware and appreciative of the demands of the Association on the time of the trustees, general officers and other members of councils and committees. After careful deliberation your committee feels that it would be impossible to compensate these men for the time taken from their individual practices. Your committee has been assured that any effort to do this would in no way enhance the number of meetings or the functioning of the Board. It does feel, however, that all members of councils and committees as well as of the Board of Trustees and the general officers should be completely compensated for all expenses involved in serving the American Medical Association.

Your committee therefore recommends that the Secretary be directed to review the actual expenses incurred in attending various meetings from data now on hand and that such adjustments be made as may be necessary to make the daily expense allowance equal to or slightly in excess of the actual expenses incurred.

3. Resolution on Appointment of Committee of Nonmedical Men to Assist in American Medical Association Campaign: Your committee is in complete agreement with this resolution and recommends its adoption.

4. Resolutions on General Practice Sections in Hospitals: Your committee is in agreement with these resolutions and recommends that the House of Delegates reaffirm its action of Dec. 10, 1946, and of June 7, 1949, encouraging hospitals to establish general practice sections.

5. Resolutions on Establishment of Outpatient Practice in Hospitals: Your committee has given careful consideration to these resolutions. It is sympathetic with the problem expressed. It reaffirms the principles adopted by this House of Delegates in Atlantic City June 9, 1949, and recommends that no action be taken on this resolution.

6. Resolutions on Formation of Junior Medical Association: Your committee devoted considerable time to these resolutions. It was helped in its deliberations by several members of the Board of Trustees, the Secretary and the President-Elect. All were in complete agreement with the principles expressed in the resolutions. It therefore recommends that the Board of Trustees be directed to make the necessary studies and to develop and present to the House of Delegates at the next session appropriate plans for such organization.

7. Resolution on Salaries Paid for Full Time Service in Public Health: Your committee is in complete agreement with this resolution and recommends its adoption.

Respectfully submitted,

L. S. MCKITTRICK, Chairman
GEORGE A. UNFUG
BERNARD KLEIN
VAL H. FUCHS
RAYMOND F. PETERSON

Report of Reference Committee on Insurance Plans and Medical Service

Dr. George S. Klump, Chairman, presented the following report:

REPORT OF THE COUNCIL ON MEDICAL SERVICE

This comprehensive report is most informative. Your reference committee has carefully considered each section. In order to understand the mass of detail and the uncounted hours of work of the Council and its staff, each member of the House of Delegates is urged to study the full text of the report.

1. Reorganization of the Council: Following an action of this House in December 1948, the Council is proceeding to reorganize by appointing seven correlating committees, each dealing with a different category of medical care.

Your reference committee believes this a forward step and requests continued activity by these correlating committees with progress reports at each session.

2. Conference on Medical Service: Your reference committee believes that the resolution dealing with this subject passed in June 1949 is sound. It should be initiated promptly by the Council or through the correlating committees. The committee believes that implementation and activation of this previous action of the House at the earliest possible time is clearly indicated.

3. Cooperation with National Education Campaign: The reference committee notes with satisfaction the cooperation of the Council with the National Education Campaign. Such correlation of effort is in the best interests of all concerned and should be continued.

4. Compulsory Sickness Benefits Legislation: The committee is aware of the importance and the serious implications of this section of the Council's report. It suggests that the Correlating Committee on Medical Care of Industrial Workers promptly begin a study of the problem so that it may bring definite recommendations to the Council prior to the next annual session.

5. Health Councils: The Council details its activities in stimulating community interest in the formation of health councils. It urges every county and district medical society to cooperate actively in their organization and in their program.

Your reference committee concurs in this suggestion, believing that only by assuming leadership can the medical profession fulfil its responsibility to the community.

6. Physicians' Placement Service: Your reference committee notes with interest the great amount of work done on the placement of physicians and wishes to compliment the Council for its accomplishments.

The committee would like to suggest an additional approach to this problem. Many young physicians are unable, for financial or other reasons, to obtain the proper equipment or facilities to practice medicine in the manner in which they have been trained. This, in the Committee's opinion, is a major cause for the shortage of physicians in certain communities. The lack of hospital facilities and the opportunity to keep pace with the newer developments is another major item in this picture. The committee believes it is not the sole responsibility of the medical profession to secure physicians for sections without physicians. The community as a whole also has a responsibility and should cooperate in making available the proper equipment and facilities in order to attract well trained men. Your committee believes that, with the advice and support of the American Medical Association and the state and county medical societies, most communities will accept this responsibility. Your committee therefore recommends that the Council on Medical Service study the results of community cooperation in the sections where it has proved successful.

It further recommends that the Council study ways and means of cooperating with the state and county medical societies in obtaining community cooperation as above mentioned.

Finally, it is recommended that an effort be made to secure the cooperation of the various medical schools in providing postgraduate facilities for physicians practicing in these or similar communities.

7. The Emergency Call Problem: The committee cannot urge too strongly that every county medical society in the United States follow the Council's suggestion to develop an effective plan for handling emergency medical calls. Your committee suggests that every member of this House of Delegates assume his personal responsibility to see that such a program is developed in his own state.

8. Voluntary Health Insurance: Your committee notes with satisfaction the remarkable growth of voluntary health insurance in 1948. There was a net growth of nearly 8,500,000 in hospitalization insurance and a net increase of over 7,750,000 under surgical benefits. As of June 30, 1949, it is estimated that approximately 65,000,000 Americans were protected by hospitalization insurance and approximately 38,000,000 Americans were insured for surgical benefits.

The committee earnestly recommends to each member of the House a study of the 1948 report by the Survey Committee of the Health Insurance Council and of the comprehensive analysis of the whole voluntary health picture as presented in the Council's report. The Council is to be commended in its continuing efforts to extend the benefits of voluntary health insurance and to make it available to every citizen.

9. Continuing Promotion and Education: Your reference committee is in accord with the general plan of promotion and education as outlined by the Council to the Board of Trustees and would urge the prompt utilization of all possible resources for the implementation of this plan.

10. Miscellaneous Activities: Your committee notes with satisfaction that the matter of indigent care is under study. The committee recommends that a complete report on this study be made at the next annual session.

Supplementary Report of the Council on Medical Service

In this report the personnel and activation of some of the correlating committees is detailed. It records that the American Legion, at its annual convention in Philadelphia, requested the American Medical Association and other health and medical organizations to assist in the development of a program for improved child health based on community action. The Council plans to implement this cooperation through its Correlating Committee on Maternal and Child Health.

Your reference committee is pleased to note this activity by the Council in cooperating with important lay groups and heartily endorses it.

The Correlating Committee on Relations with Lay Sponsored Voluntary Health Plans has recommended annotation of the Twenty Principles for such plans adopted by the House of Delegates in June 1949. The Council has assigned the task to this correlating committee.

The Council concurs in a recommendation of this Correlating Committee that the report of the Reference Committee on Insurance Plans and Medical Service adopted June 9, 1949 at the Annual Session in Atlantic City be amended so that in the last sentence of this June report the word "and" be substituted for the word "or." Your reference committee approves this recommendation.

Another recommendation of the Council was brought to it by this correlating committee, namely that the following suggestion be made to the constituent and component medical organizations:

"In considering any application from any lay-sponsored health plan such consideration shall be on the basis of past performance rather than on the basis of contemplated performance."

Your reference committee approves the recommendation with the addition after "performance" of the qualifying phrase "of not less than one year."

Resolutions

1. Resolutions on Holders of Prepaid Insurance Plans: After a complete discussion it was decided that to make this an overall recommendation of the American Medical Association applying to the entire United States, it would react to the disadvantage of some plans in certain states and would interfere with the autonomy of the various constituent state associations.

Your committee therefore recommends that this be left to the individual state societies for appropriate action.

2. Resolutions on Voluntary Health Insurance Plans: Your committee believes that the intent of these resolutions is fully discussed in the section of the report of the Council on Medical Service, entitled Continuing Promotion and Education. This section of the Council's report has been approved by the House. Accordingly, the committee believes that action on this resolution is unnecessary.

3. Resolutions on Increase in Fees for Life Insurance Examinations: Your committee, although in sympathy with the principles expressed in these resolutions, believes that some aspects of them might be contrary to certain principles laid down by the American Medical Association. Further, it is informed that seven large life insurance companies have already voluntarily raised fees and others are expected to follow their lead. Accordingly, your committee recommends that the resolutions be disapproved in their present form and that the secretary be instructed to inform each constituent state association of significant changes as reported to him by the Bureau of Medical Economic Research.

4. Resolutions on Medical and Hospital Care of Veterans with Non-Service-Connected Disabilities: Your reference committee reminds the House that these resolutions contain the same resolutions, as amended by this House, which were referred to the Board of Trustees in June, 1949. Your committee has exhausted all sources of information, including the Chairman of the Council on Medical Service and members of the Board of Trustees and has been unable to obtain information regarding any action having been taken.

Your committee agrees that veterans entitled to medical care for non-service-connected disabilities, as defined by the Congress,

should be cared for by existing civilian facilities. This is in accord with the report of the Hoover Commission. Your committee feels that regardless of the Veterans Administration hospital construction program it will be impossible to provide hospital care in all communities. However, hospital facilities are available in many communities. Veterans in this category should be allowed to enter local approved hospitals of their choice. Such an arrangement will eliminate inconvenience to the veteran and also continue a high standard of medical care. Your committee believes that the Veterans Administration hospital construction program is in many instances in competition with the Federal hospital construction program under the Hill-Burton Act and with civilian hospitals. This may well result in disastrous weakening of our entire hospital system.

Your committee further believes that veterans should be allowed free choice of physicians. The committee recognizes the extreme importance of this whole problem and its many implications. The committee believes that it is impossible in the short time available to a reference committee to deal judiciously with this problem or to make specific recommendations.

Your committee therefore recommends that a special committee, under the jurisdiction of the Council on Medical Service, be appointed and activated without further delay; that this committee be instructed to confer with the several veterans' organizations, hospital organizations, the Veterans Administration and other interested groups, with the view toward formulating a program to care for veterans in this category, and that a report be submitted to the House of Delegates at its next Annual Session.

Respectfully submitted,

GEORGE S. KLUMP, Chairman
WARDE B. ALLAN
WYMAN D. BARRETT
WILLIAM M. COCKRUM
HOWARD B. GOODRICH
EDWARD H. MCLEAN
WILLIAM B. RAWLS
ROLAND W. STAHR

On motions of Dr. Klump, duly seconded and carried, the report of the reference committee was adopted section by section and as a whole with the exception of the section dealing with Resolutions on Medical and Hospital Care of Veterans with Non-Service-Connected Disabilities.

Dr. Klump moved adoption of the report of the reference committee referring to the Resolutions on Medical and Hospital Care of Veterans with Non-Service-Connected Disabilities and the motion was seconded by Dr. Albert F. R. Andresen, New York. Dr. H. H. Shoulders, Past President, discussed the matter suggesting that a committee be appointed from the House to report next year with definite recommendations as to what the House stands for on this issue. There was further discussion. Dr. William F. Costello offered an amendment to the report of the reference committee that the matter be referred to a committee of five members of the House appointed by the Speaker to report at the next meeting of the House, and the motion was regularly seconded and carried after discussion. This section of the report as amended was then adopted on motion of Dr. Klump, duly seconded and carried.

The report of the reference committee as a whole as amended was then adopted on motion of Dr. Klump, regularly seconded and carried.

Report of Reference Committee on Emergency Medical Service

Dr. Herbert P. Ramsey, Chairman, presented the following report, which was adopted section by section and as a whole on motions of Dr. Ramsey, duly seconded and carried.

1. Report of Council on National Emergency Medical Service: The first part of this report deals with the report of the Council on National Emergency Medical Service as published in the Handbook. The printed report of the Council, in the opinion of the committee, is a record of accomplishment of the directives of the House of Delegates. The reference committee recommends commendation of the Council for the success of its activities.

In this respect the committee particularly notes with satisfaction the elevation of the position of the Surgeon General of the Army to a position compatible with its importance, as previously recommended by the House, and also the creation of the Medical Service Division within the Office of the Secretary of Defense and the appointment of Dr. Richard L. Meiling as the Director of the Office of Medical Services.

It further notes that the previous recommendations of the House regarding the extension of the time limit of the point credits for Medical Corps Reserve Officers under Public Law 810, from July 1, 1948 to July 1, 1949, was accomplished in the 81st Congress.

2. Civil Defense: In connection with the resolution dealing with civil defense passed today the committee notes with regret the lack of effective accomplishment by agencies of the the federal government in respect to planning of national civil defense. The committee is aware that long before our participation in World War II the American Medical Association had information as to availability, location, etc. of physicians and related medical services for such use as might be made of these for civil defense planning.

It feels very strongly that in respect to medical and health aspects of civil defense, it is encumbent on the medical profession to exert positive national and local leadership at this time.

The committee, therefore, recommends that the House urge the Council on National Emergency Medical Service to continue and to extend its instructive planning in this field. It is further recommended that the House urge on the Board of Trustees the national importance of this project and request they give it all possible support.

3. Resolution on Guiding Draft Legislation for Physicians: The last meeting of the House took action accomplishing the main purpose of this resolution. (June 9, 1949, page 57 of the published Proceedings.)

The committee believes that no further action by the House is needed at this time and so recommends.

4. Resolutions on Battle Assignment of Medical Reserve Officers: The committee is advised by representatives of the armed services that much of the intent of the resolution is already in the process of formulation within the armed services and that some progress has been made.

However, the committee feels that there is enough merit in this proposal to warrant further study, and it therefore recommends that these resolutions be forwarded to the Council on National Emergency Medical Service for study.

Reconsideration of Report of Reference Committee on Miscellaneous Business

Dr. Stanley H. Osborn, Section on Preventive and Industrial Medicine and Public Health, moved that the House reconsider the Report of the Reference Committee on Miscellaneous Business dealing with the Resolution on Salaries Paid for Full Time Service in Public Health, which had not been approved by the House, and the motion was duly seconded and carried by a vote of 72 to 41. After discussion Dr. Edward H. McLean, Oregon, moved that that portion of the resolution concerning specific salaries be deleted and state instead that the remuneration of these officers be commensurate with their responsibilities, the cost of living and salaries paid in similar positions. The motion was seconded by Dr. H. B. Everett, Tennessee, and carried after discussion.

It was moved by several that the report of the reference committee as amended be adopted and the motion was duly seconded and carried.

Determination of Remission of Dues

Dr. Louis H. Bauer addressed the House as follows: Mr. Speaker, a number of questions have been asked of me since the House adopted its amendments to the By-Laws and passed its resolution on dues. Although I have not had any opportunity to discuss this with the Board, I feel certain that I shall have the support of the Board in saying that any member of the American Medical Association who pays his membership dues will be sent a certificate of membership in the American Medical Association, something which has never been done before.

Furthermore, I think I also can say that the Board again will see to it that members of the Association are admitted to the scientific sessions of the Association, something that was not permitted except in the case of Fellows prior to the meeting in Atlantic City last June. When the assessment was put into effect, it was felt that if the members paid the assessment, they should be permitted to attend the scientific sessions. They were permitted to do so and they have been permitted to attend this session, and I am sure the Board will continue to see that members are invited to attend the scientific sessions of the Association.

As to the status of membership in the county, state and national organizations, I think that requires a legal opinion and I am unable to give it at the present time.

Dr. Walter E. Vest, West Virginia, asked if Dr. Bauer will see that the state association editors are notified promptly whenever that opinion is expressed and Dr. Bauer said he was sure that could be done. He hoped that the officials of the county and state societies would cooperate in this new program and said the necessary information would be forthcoming as soon as possible.

Dr. John W. Cline, California, stated: There is one point that was not covered by Dr. Bauer, and that was the determination of remission of dues in case of inability to pay and Dr. Bauer said that there is no provision in the By-Laws as amended for remission of dues and that he felt that it would be very helpful if this House would pass a resolution directing the Board of Trustees to remit dues in the case of any individual whose dues were remitted by his county and state societies for a good and sufficient reason, such as illness, certainly retirement or inability to meet the payment financially, since the American Medical Association has no desire to collect dues from any individual who, under ordinary circumstances, would not pay dues to his county or state society; the Board of Trustees would be in a much better position to carry that out if the House would enact such a resolution, because nothing is said about it in the By-Laws.

Resolution on Remission of Dues

Dr. John W. Cline, California, asked and was granted unanimous consent to introduce the following resolution:

Resolved, That the House of Delegates request the Board of Trustees to ask the state and county societies to remit dues payable to the American Medical Association on the same basis that they would remit dues payable to themselves.

The motion to adopt was regularly seconded and discussed, after which Dr. Cline deleted the words "state and" after "the" and left in "county medical societies."

After further discussion, Dr. G. Henry Mundt, Illinois, made a substitute motion that the Board of Trustees study the problem on a national basis and proceed with its findings in the matter of the collection of dues, and the substitute motion was regularly seconded. After further discussion the substitute motion was carried. Dr. Mundt was asked to repeat his substitute motion, which was done for him by the reporter.

Dr. L. Howard Schriver, Ohio, moved to reconsider the vote so that the Board be informed that there shall be no exclusion from the payment of dues of any member in the active practice of medicine. Dr. E. Vincent Askey, California, stated that the original motion was still before the House as amended and that Dr. Schriver's motion was an amendment; Dr. G. Grady Dixon, North Carolina, requested another amendment that no member be relieved from the payment of dues to the American Medical Association, regardless of state and county, without special action of the Board of Trustees, which was not seconded. Dr. Schriver was asked to restate his amendment which he did as follows:

The amendment as offered, that all members of the medical profession in active practice in the United States in order to maintain membership in the American Medical Association must pay the proscribed dues of the American Medical Association, and that the question of nonpayment of these dues in exceptional circumstances be left to the discretion of the Board of Trustees. The amendment was seconded by Dr. G. Grady Dixon, North Carolina.

After further discussion, Dr. Cline's resolution as amended was adopted.

Motion of Thanks

Dr. Allen H. Bunce, Georgia, introduced a motion thanking the Local Committee on Arrangements, the Medical Society of the District of Columbia, the Woman's Auxiliary and all others who helped to make this session the success it has been. The motion was seconded by Dr. H. B. Everett, Tennessee, and carried.

On motion regularly made, seconded and carried, the House adjourned sine die at 1:20 p. m.

Official Notes

FORTY-SIXTH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Palmer House, Chicago, February 5, 6 and 7, 1950

TENTATIVE PROGRAM

ADVISORY BOARD FOR MEDICAL SPECIALTIES

SUNDAY MORNING, FEBRUARY 5, 9:00 A. M.—12:30 P. M.

Crystal Room

Round Table Discussion: *The Evaluation of the Qualifications of Candidates for Certification by American Boards in the Specialties*

Participants to be announced. They will include authorities on testing procedures and representatives of the American Boards who will report on the experiences of the different boards with varying types of examinations.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS, AMERICAN MEDICAL ASSOCIATION

MONDAY MORNING, FEBRUARY 6, 9:30 A. M.

Red Lacquer Room

H. G. WEISKOTTEN, M.D., *Presiding*

Address of the Chairman: *The Responsibility of a Profession for the Promotion of Educational Standards*

H. G. WEISKOTTEN, M.D., Chairman, Council on Medical Education and Hospitals, American Medical Association

Survey of Medical Education: Preliminary Observations

JOHN E. DEITRICK, M.D., Director, Survey of Medical Education

Review of Report of Surgeon General's Committee on the Study of Medical School Grants and Finances

LOWELL J. REED, Ph.D., Chairman of the Surgeon General's Committee

The Location of a Medical School: Considerations in Favor of Locating a Medical School on a University Campus

W. REECE BERRYHILL, M.D., Dean, University of North Carolina School of Medicine

The Location of a Medical School: Considerations in Favor of Locating a Medical School in a Metropolitan Area

ROY R. KRACKE, M.D., Dean, Medical College of Alabama

MONDAY AFTERNOON, FEBRUARY 6, 2:00 P. M.

Panel Discussion: *The Place of the Specialties in Undergraduate Medical Education*

LOWELL T. COGGESHALL, M.D., Chicago, *Moderator*
PERCIVAL BAILEY, M.D., Chicago
ROBERT G. BLOCH, M.D., Chicago
OLIVER COPE, M.D., Boston
EDMUND P. FOWLER JR., M.D., New York
GEORGE H. GARDNER, M.D., Chicago
WILLIAM T. GREEN, M.D., Boston
FRED J. HODGES, M.D., Ann Arbor, Mich.
WILLIAM F. HUGHES JR., M.D., Chicago
MARION B. SULZBERGER, M.D., New York

Medical Education in Great Britain

HAROLD DIEHL, M.D., Dean of Medical Sciences, University of Minnesota Medical School
LOREN R. CHANDLER, M.D., Dean, Stanford University School of Medicine
STANLEY DORST, M.D., Dean, University of Cincinnati College of Medicine

FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

MONDAY EVENING, FEBRUARY 6, 7:00 P. M.

FEDERATION DINNER

Crystal Room

Greetings
ERNEST E. IRONS, M.D., President, American Medical Association

Address:
RAYMOND B. ALLEN, M.D., President, University of Washington

TUESDAY MORNING, FEBRUARY 7, 9:30 A. M.

Red Lacquer Room

JACOB L. LOCHNER, M.D., *Presiding*

Address of the President: *Interstate Reciprocity by Medical Licensing Boards and Basic Science Boards*
JACOB L. LOCHNER, M.D., President, Federation of State Medical Boards of the United States

The National Health Service of Great Britain
WILLARD C. RAPPLEYE, M.D., Dean, Columbia University College of Physicians and Surgeons

General Practice and Licensure
ARTHUR D. WOODS, M.D., Chairman, Iowa Board of Medical Examiners

Discussion: ADAM P. LEIGHTON, M.D., Portland, Me.

Resettlement of the Displaced Physician
ALEXANDER M. BURGESS, M.D., Providence, R. I.

TUESDAY AFTERNOON, FEBRUARY 7, 2:00 P. M.

Panel Discussion: *Recent Developments with Respect to Foreign Medical Schools*

WALTER L. BIERRING, M.D., Des Moines, Moderator
DONALD G. ANDERSON, M.D., Chicago
CREIGHTON BARKER, M.D., New Haven, Conn.
FREDDY HOMBURGER, M.D., Boston
VERNON LIPPARD, M.D., Charlottesville, Va.
JACOB L. LOCHNER, M.D., New York
J. J. MOORE, M.D., Chicago

Washington Letter

(From a Special Correspondent)

Dec. 27, 1949.

Scare Tactics Ascribed to Acting FSA Administrator

Representative Robert F. Rich (Republican, Pennsylvania) characterized as another trick to help put over socialized medicine a statement made before a congressional committee in mid-December by John L. Thurston, acting administrator of the Federal Security Agency. Appearing before the Joint Congressional Committee on the Economic Report, Thurston asserted that three out of every 30 school children "are destined to spend part of their lives in a mental hospital."

"The Truman Administration," replied Rich, a member of the committee, "determined to socialize the United States, has used every trick of propaganda and duress to put over the main plank of its socialistic program—socialized medicine. But the latest assertion of a responsible government official is one of the most shocking statements to be made in the program to socialize this country. It smacks of terrorism and is directed at the parents of the millions of school children in the nation.

"As a government official on the Truman welfare state payroll, Mr. Thurston has a right to testify in favor of the spending and socialistic programs concocted by the White House planners. But he has no right to wave the magic wand of conjuration and come up with an assertion that is bound to frighten and alarm the parents of all children attending schools in this country. . . . It is beyond belief that three out of an average of 30 pupils are due to suffer from mental illness, and it seems to me the administration is trying to scare the people into accepting socialized medicine."

Release Unclassified Research Reports

The U. S. Atomic Energy Commission has made available for the first time 57 declassified and unclassified (from a national security standpoint) reports based on various investigations conducted in national laboratories. Among them are nine reports on medical and biological research, aggregating 178 pages. One deals with the effect of low dosages of radiation on the blood cell counts of exposed workers in the Los Alamos Scientific Laboratory. Conducted by Dr. Norman P. Knowlton Jr., the study uncovered a small decrease in the white blood cell count of the 10 workers who received about 0.2 r per week of gamma radiation over a two year period. No other physiological effects of significance were noted.

Other reports are in genetics, effect of nitrogen mustards on metabolism of nucleic acids in rabbit tissue, air blast injury and flash burns, among other subjects. Information on procurement of the reports is obtainable from the Document Sales Agency, Atomic Energy Commission, Box E, Oak Ridge, Tenn.

Dr. Hawley Urges Merger of Federal Medical Services

The case for consolidation of federal medical and hospital facilities and activities was laid before the National Reorganization Conference in Washington December 13 by Dr. Paul R. Hawley, chief executive officer of the Blue Cross and Blue Shield Commissions. The conference, sponsored by the Citizens Committee for the Hoover report, was attended by several hundred representatives of national organizations.

Dr. Hawley recommended organization of reserve hospital units as armed forces units, rather than Army, Navy or Air Force; he charged that the government's present multiplicity of hospital systems, both military and civilian, makes for waste of dollars and manpower and characterized as extravagant the Army-Navy policy of encouraging medical procurement by offering postgraduate training to volunteers.

"The medical manpower situation in the country is rapidly forcing us to share with the general population as much professional personnel as possible," he said. "Regardless of every other consideration, we are faced with the indisputable fact that none of the federal medical services is now able to procure as many medical men as their individual requirements demand. We have the choice of only two alternatives—to continue the present wasteful and demonstrably ineffective system or to pool so much of our medical responsibilities as are not inextricably linked with other functions of the government."

Changes Announced in AEC Fellowship Policies

New provisions governing Atomic Energy Commission fellowships during the 1950-1951 academic year, administered by the National Research Council, were announced December 16. 1. No new predoctoral fellowships will be offered. 2. New postdoctoral fellowships in medicine, biologic, biophysics and physics will be offered, "but only for advanced training in fields of research closely related to the national atomic energy program wherein access to secret data is required or desirable." Successful applicants must submit to investigation by the Federal Bureau of Investigation. 3. Applications for renewal of current nonsecret predoctoral fellowships and postdoctoral medical fellowships will be accepted and grants made to those who qualify professionally and receive Federal Bureau of Investigation clearance.

About 75 new fellowship awards are to be made next year and 175 renewals granted, according to present plans. The cost of the program will range from $600,000 to $900,000, depending on the number of grants made. At present, 403 Atomic Energy Commission fellows are at work, and 18 others will begin their studies within a few weeks.

Coming Medical Meetings

Annual Congress on Medical Education and Licensure, Chicago, Palmer House, Feb. 5-7. Dr. Donald G. Anderson, 535 N. Dearborn. St., Chicago, Secretary.

National Conference on Rural Health, Kansas City, Mo. Feb. 3-4. Dr. F. S. Crockett, 535 N. Dearborn St., Chicago, Chairman.

American Academy of Orthopedic Surgeons, New York, Waldorf-Astoria Hotel, Feb. 11-16. Dr. Harold B. Boyd, 869 Madison Ave., Memphis, Tenn., Secretary.

GOVERNMENT SERVICES

PUBLIC HEALTH SERVICE

MORE HEART RESEARCH GRANTS

The award of $60,961 in Public Health Service grants for four nonfederal heart research projects was announced December 15 by the acting Federal Security Administrator. The grants were made by the National Heart Institute after recommendation by the National Advisory Heart Council and approval by Surgeon General Scheele.

Under a grant to Duke University School of Medicine, Durham, N. C., Dr. Walter Kempner will investigate the mechanism by which the rice diet benefits patients with high blood pressure. Dietary factors such as salt, fats and proteins will be investigated for their effects on high blood pressure and on arteriosclerosis. Dr. Kempner will also attempt to determine whether simple starvation, protein starvation or a low fat diet can be substituted for the rice diet.

Dr. Otto Krayer, under a grant to Harvard Medical School, Boston, will investigate various chemical compounds for properties which will counteract heart-stimulating substances released by the body.

Dr. Irvine H. Page, under a grant to the Cleveland Clinic Foundation of Cleveland, will study the endocrine glands to determine their role in the development of high blood pressure and hardening of the arteries. Using radioactive iodine, Dr. Page will study the influence of thyroid secretions on the distribution of fat products in the body. Similarly, employing pituitary adrenal corticotropic hormone, he will attempt to find the part played by the adrenal gland in these chronic diseases.

Dr. Sheppard M. Walker, University of Louisville, Kentucky, will investigate muscle activity. Employing adrenal cortical hormones, sex hormones, quinine and other chemical and electrical stimulation, he will attempt to gage the effects of these on muscle function, with particular reference to the heart muscle.

The aforementioned grants are in addition to grants announced last month. With the new awards, heart grants approved since July 1, 1949, have reached a total of 368, amounting to $10,251,778 in Public Health Service funds granted to nonfederal institutions for heart research, for improving and expanding cardiovascular teaching and for construction of laboratory facilities.

ENDEMIC YELLOW FEVER AREAS

Dr. Gilbert L. Dunnahoo, chief, Division of Foreign Quarantine of the Public Health Service, was in Geneva, recently, to attend meetings of the World Health Organization's Yellow Fever Panel, of which he is a member, and the Expert Committee on International Epidemiology and Quarantine, of which he is vice chairman. The Yellow Fever Panel met December 1-6 to redefine the endemic yellow fever areas of the world and to determine the proper methods of controlling the disease.

The Expert Committee on International Epidemiology and Quarantine, in session, December 5-14, planned to complete drafting health requirements, including immunization procedures, pertaining to international travel. The draft will be submitted to the World Health Assembly, in accordance with the World Health Organization constitution, to replace present international sanitary conventions on maritime and air travel.

EXAMINATION FOR NURSE OFFICERS

Examinations for nurse officers in the regular Commissioned Corps of the U. S. Public Health Service will be held March 20-22, 1950, in various cities throughout the country. Completed applications must be in the Washington office by February 20. While most appointments from this examination will be for staff nurses in Public Health Service hospitals, some positions for supervisory and public health nurses are open. Regular Corps benefits include periodic pay raises and promotions, liberal retirement provisions, medical care and annual sick leave. Appointments will be made in the grades of junior assistant (equivalent to Army rank of second lieutenant), assistant (first lieutenant) and senior assistant (captain). Entrance pay, including rental and subsistence allowance, is $3,789 for junior assistant, $4,306 for assistant and $5,166 for senior assistant.

Applicants must be graduates of an approved school of nursing, with a bachelor's degree from a recognized college, and currently registered as a graduate professional nurse. Additional professional training and experience are required for assistant and senior assistant grades. For information write to: Surgeon General, U. S. Public Health Service, Federal Security Agency, Washington 25, D. C., Attention: Division of Commissioned Officers.

VETERANS ADMINISTRATION

NEW MANAGERS OF HOSPITALS

The appointment of the following new managers of veterans hospitals has been announced: Dr. Harry H. Botts, manager of the Chillicothe, Ohio, hospital; Dr. Richard L. Harris, manager of the nearly completed Peekskill, N. Y., hospital, and Dr. Arvin E. Trollinger, manager of the Marion, Ind., hospital. Dr. Botts has been with the Veterans Administration since 1923. Dr. Harris formerly was chief medical officer of the veterans center in Los Angeles. Dr. Trollinger has been with the Veterans Administration since 1935 and was formerly clinical director of the Veterans Perry Point Hospital.

Dr. Morley B. Beckett, formerly of Saginaw, Mich., has been named manager and chief of professional services of the Veterans Hospital at Saginaw, where he was formerly city health officer.

Dr. Lloyd B. Andrew, chief of Professional Services at the Veterans Administration Hospital in Jackson, Miss., has been named manager and chief of Professional Services of the Big Spring, Texas, Veterans Administration Hospital. Dr. Andrew is a veteran of both world wars, was in private practice for many years in Joliet, Ill., and has been with the Veterans Administration since 1937.

PERSONAL

Dr. Alex M. Burgess of Providence, R. I., has accepted a full time position as section chief in medicine for the Veterans Administration in the New England-New York area and will supervise the medical departments in some 30 veterans hospitals. Dr. Burgess recently retired as chairman of the Department of Medicine at Rhode Island Hospital, Providence. He is a member of the American Board of Internal Medicine and a regent of the American College of Physicians. His headquarters in the new position with Veterans Administration will be at 55 Tremont Street, Boston.

Dr. Rodger J. B. Hibbard has been appointed chief of the tuberculosis service at the Fort Bayard Veterans Hospital. Recently Dr. Hibbard was superintendent and medical director of the Central Florida State Tuberculosis Sanatorium at Orlando, Fla. He is a graduate of McGill University Medical School, Montreal, and is a specialist certified by the American Board of Internal Medicine.

Dr. Joseph T. Aquilina has been appointed assistant chief of medical services at the Veterans Hospital in Buffalo. His appointment was recommended by the Dean's Committee of the University of Buffalo School of Medicine.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

A Veteran Treasurer.—The Arizona Medical Association at its meeting October 2 accepted the resignation of Dr. Clarence E. Yount Sr., treasurer of the association for the last 29 years. Dr. Yount has served the society for 36 years, having been elected secretary in 1913 and continuing in that office until 1919, when he was elected president.

CONNECTICUT

Committee on Mental Health. — A seven member committee on mental health has been appointed by the Connecticut State Medical Society to make a continuing study of all phases of care and treatment of mentally ill patients and education and training in the field of psychiatry. The following members were appointed: Drs. Harold L. Amoss, Greenwich; John H. Bumstead, New Haven; Franklin S. DuBois, New Canaan, chairman; Joseph A. Farmer and G. Gardiner Russell, Hartford; Daniel P. Griffin, Bridgeport, and Solam Segel, Norwich.

ILLINOIS

Hospital at Red Bud Opened.—The 61 bed St. Clement's Hospital in Red Bud is the first Illinois hospital to be completed of the 14 community hospitals which have received grants-in-aid for construction. The new hospital replaces the old one originally erected as a home for the Sisters Adorers of the Most Precious Blood, the sponsoring organization. Ground was broken for the $1,100,000 hospital on March 19, 1946 and the first section opened formally in April 1948.

Joint Tuberculosis Meeting.—The Illinois Chapter of the American College of Chest Physicians and the Chicago Tuberculosis Society will meet jointly January 13 at the Congress Hotel, Chicago. After dinner at 6:30, a scientific program will be presented. All physicians are cordially invited to attend. The speakers will be Charles K. Petter, Waukegan, "Treatment of Pulmonary Tuberculosis with Lucite Plombage," Earl S. Gilbert and George C. Turner, Chicago, "Pneumoperitoneum Combined with Streptomycin in Treatment of Pulmonary Tuberculosis," and Meyer R. Lichtenstein and Paul Alsano, Chicago, "Use of Paraaminosalicylic Acid in Treatment of Tuberculous Empyema."

Chicago

Society News. — The North Side Branch of the Chicago Medical Society will hold its meeting January 5 at the Drake Hotel at 8 p. m. Dr. Hugh McCulloch, Chicago, will speak on "The Effect of ACTH and Compound E in Rheumatic Fever" and Dr. William A. Altemeier, Cincinnati, on "Recent Developments in Chemotherapy."

Lectures on Behavior Development.—A series of lectures on the development of behavior will be presented beginning January 11 at 12:30 p. m. at the Chicago Medical School. The program is as follows:

Jan. 11, Roger W. Sperry, Ph.D., Chicago, The Mechanisms of Neural Growth.
Jan. 18, F. W. Becker, Ph.D., Philadelphia, Intrauterine Development of Behavior.
Feb. 1, A. H. Riesen, Ph.D., Chicago, Postpartum Development of Behavior.
Feb. 8, Harry H. Garner, Chicago, The Genesis of Abnormal Behavior.
Feb. 15, Kimball, Young, Ph.D., Chicago, The Induction of the Individual into Society.
March 8, Clifford R. Shaw, Ph.D., Chicago, Crime in Society.

Illinois Fellowships for Graduate Training. — Ten research fellowships will be awarded for one calendar year in the fields of medicine, dentistry and pharmacy by the University of Illinois Graduate College. The fellowships carry stipends of $1,800 per year for medical and dental graduates and $1,200 for pharmacy graduates, with exemption from tuition fees for all appointees. In unusual cases a $2,400 stipend may be awarded to those holding a doctor's degree. Registration in the Graduate College for full time credit toward M.S. or Ph.D. degrees is required. Fellowships provide opportunity for research training either in the basic medical sciences or in the application of these sciences to clinical investgation. They are primarily for graduates who are in the early stages of their preparation for a teaching and research career, although time credit toward specialty board requirements in basic sciences is recognized. Fellows may be reappointed in competition with new applicants. Candidates for fellowships must have completed a minimum training in any one of the following ways or the equivalent thereof: (1) Bachelor's and M.D. degrees, (2) Bachelor's and D.D.S. degrees and (3) Bachelor's degree in pharmacy and M.S. degree. Appointments will be announced March 1 for fellowships beginning July 1 or Sept. 1, 1950. Application blanks may be secured from the Assistant Dean, The Graduate College, University of Illinois, 808 South Wood Street, Chicago 12.

KANSAS

Gift to Research Fund.—The Kansas University Endowment Association has been given the permanent use of an income from 1,340 acres of land in Carroll County, Missouri, by Mr. Dixon Fagerberg, Prescott, Ariz. Income from the gift will be placed in the Dixon Fagerberg Fund for Medical Research at the medical center. The land is valued at approximately $50,000.

Dedicate University Hospital.—A new addition to the University of Kansas Medical center was opened November 21 in Kansas City. The five story hospital cost $1,035,000. The surgery suites are fitted for television cameras for teaching purposes; intercommunication systems from patient to nurse have been installed, and oxygen and suction systems are piped to each room. The walls, which have curving lines in contrast to the square corridor aspect of most hospital rooms, are decorated in pastel colors with a plastic material on the lower walls to reduce redecorating costs. A portrait of Dr. Thomas G. Orr, former head of the department of surgery, was presented to the center by members of his family.

KENTUCKY

Cancer Speakers Bureau.—The Kentucky Division of the American Cancer Society in cooperation with the Kentucky State Medical Association and the State Department of Health is sponsoring a bureau organized to arrange speeches on cancer by Kentucky physicians. Medical groups and civic organizations may select one of seventeen topics available from the speakers' bureau, which will choose the speaker from a list of fifty-two Kentucky physicians. No fee will be charged for the service.

MARYLAND

Dr. Thomas S. Cullen Honored. — The State Board of Health of Maryland passed the following resolution on the occasion of the eighty-first birthday of Dr. Thomas S. Cullen November 20: "This Board notes with pleasure the fact that its dean and mentor, Dr. Thomas S. Cullen, will celebrate on Nov. 20, 1949, his eighty-first birthday. So long a period of distinguished service to his profession and to the people of Maryland is a privilege which few men enjoy. We honor him for it. As a Board we are proud and happy to have enjoyed association with him and to have observed his humor, his unending kindness, his intelligence and his unshaken integrity. We wish to him many more years of useful and satisfying membership on this Board." Dr. Cullen is professor emeritus of gynecology at Johns Hopkins University, Baltimore, and a former member of the Board of Trustees of the American Medical Association.

MASSACHUSETTS

State Society Sponsors Health Protection Clinics.—A unique health protection clinic, where apparently healthy persons can obtain without charge approved tests for detecting diseases in their early stages, will be opened in Boston on January 3 at the New England Medical Center and Pratt Diagnostic Hospital, 30 Bennet Street. Anyone 18 years or over may receive the tests free if not under the regular care of a physician. The clinic is said to be the first of its type offered to the public in the United States. The first of five clinics authorized by the Massachusetts Medical Society to be located in pivotal areas throughout the state, the health protection clinic will be sponsored by the society with the cooperation of the Massachusetts Department of Public Health and voluntary agencies. The simple screening check-up will include a hearing and vision test, chest roentgenogram, blood tests, urinalysis, blood pressure, temperature, height and weight, physical examination and a Papanicolaou test for cancer if indicated.

The estimated cost of the clinic for a six month period is $30,000, of which the U. S. Public Health Service will supply $15,000 for clinic personnel and the Massachusetts Department of Public Health will provide $12,000. The balance will come

from voluntary agencies, including the American Cancer Society and the Massachusetts Heart Association. The New England Center Hospital is providing its facilities. The staff will consist of six examining physicians, three laboratory technicians, two nurses, three technicians to administer hearing and vision tests and take chest roentgenograms; a medical social service worker and a receptionist-clerk. Dr. Claire F. Ryder, epidemiologist with the state health department, has been appointed administrator. Twenty-five persons will be examined at each clinic session. No diagnosis or treatment is made at the clinic. The clinic will forward a confidential report to the patient's family physician. On the executive committee are Dr. John J. Poutas, chairman; Dr. Brooks Ryder, Boston, secretary; Dr. Alfred L. Frechette, director, Brookline Health Department; Dr. Sidney Cobb, Ayer, medical director, Nashoba Associated Boards of Health, and Dr. George R. Dunlop, Worcester.

MICHIGAN

Research on Arthritis and Rheumatism.—The board of directors of the Michigan chapter of the Arthritis and Rheumatism Foundation has authorized research grants of $65,846. The largest grant, $24,000, went to Children's Hospital, Detroit, to investigate disturbances in metabolism occurring during attacks of arthritis and rheumatic fever in children and adults, and the next largest grant, $19,240, went to Harper Hospital, Detroit, for a study of the therapeutic value of natural and synthetic hormonal products (cortisone and pituitary adrenal corticotropic hormone) in arthritis and also to study their effects on the nervous system during attacks of rheumatoid arthritis. The remaining grants went to University Hospital, Ann Arbor; Providence Hospital, Detroit, and the Rheumatic Fever Control Committee of the Michigan State Medical Society.

MISSOURI

Personal.—Dr. John Zahorsky, professor emeritus of pediatrics at Saint Louis University School of Medicine, was recently granted an emeritus fellowship by the American Academy of Pediatrics. Dr. Zahorsky was associated with St. Louis University from 1912 until the time of his retirement in 1948.

Dr. Albrecht Retires; Further Appointments. — Dr. Franklin H. Albrecht, a member of the faculty of the Saint Louis University School of Medicine for 33 years and chairman of the department of orthopedic surgery, has been appointed associate professor emeritus and will retire as chairman of the department. Dr. Albrecht was commended by the university for his many years of service to medical education. Dr. Robert M. O'Brien, instructor in orthopedic surgery at the university since 1941, has been appointed assistant professor and chairman of the department to succeed Dr. Albrecht. Consulting orthopedist for the United States Public Health Service from 1922 to 1947, Dr. Albrecht came to the university as an instructor in 1916. He cooperated for a number of years with the late Dr. J. Archer O'Reilly, formerly head of the department, in the conduct of graduate training for medical students. He has been associated with Jewish, Bethesda and Saint Mary's hospitals. Dr. O'Brien is a 1936 graduate of the Saint Louis University School of Medicine and interned at Saint John's Hospital, St. Louis, where he is now a staff member.

Dr. Sidney Smith, who has been appointed assistant professor of surgery, received his M.D. degree from Rush Medical College in 1941. He served in World War II, then did postgraduate work in surgery at Northwestern University Medical School. He will receive a Ph.D. in surgery next June. Dr. Smith has been assistant attending surgeon at Children's Memorial Hospital in Chicago since 1946 and has held the same position at the Cook County Hospital since 1947. He was also attending surgeon and chief of cardiovascular surgery at the Grant Hospital in Chicago.

NEW HAMPSHIRE

State Society Names Executive Secretary. — The New Hampshire Medical Society has selected Hamilton S. Putnam, Wilton, as its first executive secretary. Since March 1949 Mr. Putnam has been directing the society's educational campaign on nationalized health insurance. He was formerly a newspaper man and secretary to U. S. Senator Styles Bridges in Washington, associated with the Veterans Administration as public relations director in New Hampshire and Vermont, then field secretary for the New Hampshire Republican State Committee and secretary to Governor Sherman Adams. At the annual meeting in September, the society presented a resolution to the retiring secretary, Dr. Carleton R. Metcalf, in appreciation for his 16 years of service to the society.

NEW YORK

Appoint Secretary to Mental Health Commission.—Dr. Ernest M. Gruenberg, assistant in the department of psychiatry and mental hygiene and the department of public health, Yale University School of Medicine, New Haven, Conn., has been appointed executive secretary of the New York State Mental Health Commission, which was created by the 1949 legislature to "initiate, formulate and execute a master plan" for the promotion of mental health on the community level. Dr. Gruenberg received his medical degree from the Johns Hopkins School of Medicine, Baltimore, and a master's degree in public health from Yale University. Before joining the staff at Yale he studied psychiatry at Bellevue Hospital and was in private psychiatric practice in New York.

New York City

Fourth Harvey Lecture.—Dr. Maxwell M. Wintrobe, professor of medicine, University of Utah School of Medicine, Salt Lake City, will deliver the fourth Harvey Lecture of the current series at the New York Academy of Medicine January 19 on "Factors and Mechanisms in Production of Red Corpuscles."

Rockefeller Gift to Cancer Hospital. — A donation of $2,000,000 to Memorial Hospital for cancer research has been made by John D. Rockefeller Jr. The hospital will raise enough more to make $5,250,000 for expansion. Memorial Hospital is a part of the Memorial Cancer Center and includes the Sloan-Kettering Cancer Research Institute and the Strang Clinic. The gift was announced at a dinner commemorating the tenth year of the center.

Advisory Group Studies Hospital Construction Program. — A committee of 12 physicians, including two former commissioners of hospitals and representatives of the New York Academy of Medicine, county medical societies, the Board of Health and municipal and voluntary hospitals, was appointed December 15 by Dr. Marcus D. Kogel, commissioner of hospitals, to "evaluate the modernization and construction program of the department of hospitals and to make appropriate recommendations." The committee was named at the request of Mayor O'Dwyer, who asked that the hospital commissioner be the chairman. Members of the committee are: Drs. George Baehr, Edward M. Bernecker, John J. Bourke, Clarence E. de la Chappelle, Henry A. Holle, Harry S. Mustard, John B. Pastore, Elaine P. Ralli, Willard C. Rappleye, Thomas M. Rivers, Joseph Tenopyr and a representative of the five county medical societies to be selected. The scope of the hospital department's Medical Advisory Group was outlined as follows: (1) to analyze critically and review the program of the department of hospitals and to evaluate the projects and services, (2) to advise on the order of priority of the projects approved for development, (3) to determine the total needs of the Department of Hospitals in the form of hospitals, related facilities and service and to recommend the manner in which these needs are to be accomplished. The Mayor, in requesting the committee's formation, said that speed is important since the program should be launched at the earliest possible date. New York City has a $150,000,000 hospital construction program planned and the $42,000,000 construction program already under way.

OKLAHOMA

A Hospital Superintendent for 50 Years.—Dr. David W. Griffin of Norman has completed 50 years as superintendent of Central State Hospital. He came to the hospital when it was still a one building private sanitarium caring for the state's mentally ill on a contract basis. A two million dollar building program is now in progress, including modernization of one building, construction of a new tuberculosis center, women's dining hall and kitchen and additions to the power plant and laundry. For his contributions to the care of the mentally ill, Dr. Griffin has been made a member of the Oklahoma Hall of Fame. He will retire when the state's mental health board finds a man to replace him.

PENNSYLVANIA

Grievance Committee Program.—A study to devise means whereby the public may bring its complaints regarding medical care before committees of the medical profession was instituted by the board of trustees of the Medical Society of the State of Pennsylvania at its quarterly meeting. A committee was appointed to study similar "courts of appeal" conducted by other state medical societies. Those on the committee include Drs. Walter F. Donaldson, Pittsburgh, secretary-treasurer; Louis W. Jones, Wilkes-Barre, first vice president; Howard K. Petry, Harrisburg, chairman, Committee on Public Relations, and James Z. Appel, Lancaster, trustee and councilor. The majority

of states now operating grievance committees are predominately rural states, and the possibility of adopting a similar program in densely populated states requires thorough study. The Pennsylvania committee appointed will report to the house of delegates of the state society at its next session.

Hospital with Aluminum Exterior.—What is reported to be the first hospital in the world with an all aluminum exterior is being built in Bradford at the Northwestern Pennsylvania Medical Center. The five story 200 bed hospital, to cost about $1,800,000, is expected to be completed early in 1951. The walls will weigh only 40 pounds per square foot instead of the usual 120 pounds. The exterior will require no painting. Windows are protected from the direct rays of the sun by aluminum sunshades.

UTAH

Dr. Lawrence Goes to Indiana.—Dr. Edwin A. Lawrence has been appointed professor of surgery on the staff of the Indiana University School of Medicine, Indianapolis, effective January 1, with the additional title of coordinator of cancer treatment and research. Dr. Lawrence has been connected with the University of Utah College of Medicine, Salt Lake City, in a similar capacity for the past three years and previously was on the staff of the Yale University School of Medicine, New Haven, Conn. He is a member of the American Association for Cancer Research, American Association for Thoracic Surgery and the Society of University Surgeons and other professional groups.

GENERAL

Fellowships in Allergy.—Applications are being accepted by Northwestern University Medical School, Chicago, for two fellowships in allergy, one being available on July 1, 1950, the other on Jan. 1, 1951. The specific purpose of these fellowships is to provide clinical training in allergy and related fields while allowing time for laboratory research. Two years' postgraduate training approved by the Board of Internal Medicine or Pediatrics is a prerequisite. The stipend ranges from $2,400 to $3,500.

Award for Essay on Sterility.—The American Society for the Study of Sterility is offering an annual award of $1,000 known as the Ortho Award for an essay on the result of clinical or laboratory research pertinent to the field of sterility. Competition is open to those in clinical practice and to persons whose work is restricted to research in basic fields or full time teaching positions. The prize essay will appear on the program of the meeting of the American Society for the Study of Sterility at the Sir Francis Drake Hotel, San Francisco June 24-25. Information may be obtained from the secretary, Dr. Walter W. Williams, 20 Magnolia Terrace, Springfield, Mass. Essays must be in his hands by April 1.

Radiologic Society Award.—In recognition of their contributions to radiology, Dr. John D. Camp of Rochester, Minn., and Dr. Donald S. Childs of Syracuse, N. Y., were presented the 1949 Gold Medal Award of the Radiological Society of North America, Inc., at its recent annual meeting in Cleveland. Dr. Camp, professor of radiology at the Mayo Foundation of the University of Minnesota, has been in radiologic work since 1922. He was lauded for "devoting his time, since medical school, to the teaching and writing of radiology." Dr. Childs, secretary of the Radiological Society of North America, Inc., since 1931, has devoted the major part of his career to the teaching of radiology. He is a veteran of 28 years in the department of osteology at Syracuse (N. Y.) University and 23 years as professor of clinical radiology there.

Record Low Tuberculosis Death Rate.—The tuberculosis death rate in the United States for 1949 shows a reduction of about 10 per cent from the figure of the year before. The present rate is only about one-half that of 12 years ago, according to the statisticians of the Metropolitan Life Insurance Company. "The gains against tuberculosis have been accelerated during the postwar years," the statisticians note, "and, should the recent trend continue, the disease before long will be relegated to a minor position among the causes of illness and death in our county." At present only one state (Arizona) has a tuberculosis death rate of over 60 per 100,000 population. In 1933, when nationwide figures first became available, 19 states and the District of Columbia had rates of 60 or higher. Intensified public interest and support is seen as an outstanding factor in accelerating the decline of the tuberculosis death rate. Since the end of the war case finding has been pushed in an ever widening area, and at present about 10,000,000 persons a year are receiving roentgen examinations. At the same time, efforts have been made to increase the facilities for the care and treatment of the tuberculous.

Maternal Mortality and Hospitalization.—Two decades of progress in overcoming the hazards of pregnancy and childbirth have reduced the death toll from maternity in the United States to one seventh of its former rate according to Dr. Louis I. Dublin of the Metropolitan Life Insurance Company. The maternal mortality rate of 20 years ago was 7 per 1,000 live births, one of the highest in the civilized world at that time. The rate was down to 1.3 per 1,000 by 1947, the latest year for which complete data are available, and currently it is estimated to be about 1 per 1,000 live births. Mortality due to childbearing is lowest in regions where confinements in hospitals is most frequent. Most favorable rates prevail in New England, where 97 per cent of the births are in hospitals, and in the Pacific states, where 98 per cent are in hospitals. The highest mortality is shown to be in the East South Central region, where only 55 per cent of the births are in hospitals.

FOREIGN

Communicable Diseases in Japan.—The General Headquarters, Supreme Commander for the Allied Powers, announces that for the week ending Sept. 24, 1949 in Japan 15,027 cases of communicable diseases were reported for 17 diseases, as compared with 17,030 cases in the preceding week. The 135 cases of diphtheria constituted more than 25 per cent below the number for the previous week. Dysentery cases (955) were 23 per cent fewer than in the preceding week; the number of deaths also decreased, from 347 to 285. The number of typhoid cases decreased, from 181 last week to 173 currently; deaths this week (15) were about half those reported previously (28). There were 48 cases of paratyphoid and 2 deaths this week, compared with 58 cases and 5 deaths last week. No smallpox cases have been reported since mid-July. In the thirty-ninth week of last year also, no cases were reported, while in the corresponding period in 1947 there were 2. One case of typhus was reported this week; there were no cases during the two preceding weeks. The number of malaria cases decreased from 95 last week to 64 in the present period. There were 24 per cent fewer cases of Japanese "B" encephalitis reported this week (229) than last week (301). The number of deaths reported decreased from 90 to 81. Cases in the present period were 15 per cent higher than during the same week of last year and more than seven and a half times the number recorded during the corresponding week in 1947. Scarlet fever cases numbered 42 this week with 2 deaths, as compared with 44 last week with no deaths. There were 38 per cent fewer cases of epidemic meningitis than in the preceding week (61); deaths also decreased, from 18 to 11. No cases of cholera or plague were reported. The number of measles cases this week was 20 per cent less than in the previous week (492), but it was nearly twice the figure recorded for the thirty-ninth week of last year. There was a decrease in whooping cough, from 3,503 cases last week to 2,770 in the present week. Tuberculosis cases this week (9,187) was about 20 per cent greater than in the thirty-ninth weeks of both 1948 and 1947. There were 980 cases of pneumonia, as compared with 1,022 cases last week. The current and cumulative numbers of syphilis cases were 3,109 and 146,437, respectively; for gonorrhea, 3,569 and 138,256; and for chancroid, 374 and 17,643. The totals this week for syphilis and gonorrhea were both lower than in the preceding week. Current chancroid cases, on the other hand, were higher than last week. Syphilis and chancroid totals for the present week were both lower than in the same period of last year, but gonorrhea was higher.

Marriages

BRADFORD STEVENS COLWELL, New Haven, Conn., to Miss Mary Allerton Cushman of Bridgeport, November 19.

EDWARD VAN ZILE SCOTT to Miss Katherine Ledbetter Brooks, both of Birmingham, Ala., November 21.

MYRON G. SANDIFER, Lowrys, S. C., to Miss Constance Mary Fay of Somerville, Mass., in November.

DAVID STRAND JOHNSEN to Miss Claudia Stone, both of Washington, D. C., November 23.

LELAND GAIL WILCOX, Tyler, Texas, to Miss Cornelia Gilliam of Windsor, N. C., November 2.

C. RAY PHELPS to Miss Jacqueline Edmonds, both of Ottumwa, Iowa, in November.

RAFE BANKS JR., Atlanta, Ga., to Miss Jane Elizabeth Wood at Decatur, October 26.

Deaths

John Stanley Coulter ⊕ for many years chairman of the Council on Physical Medicine and Rehabilitation of the American Medical Association, died at his home in Westville, Ind., December 16, aged 64, of cerebral hemorrhage. Dr. Coulter was born in Philadelphia Sept. 27, 1885. He was graduated at the University of Pennsylvania School of Medicine, Philadelphia, in 1909, and at the Army Medical School, Washington, D. C., in 1911. He resigned from the regular Army Medical Corps in 1920, then came to Chicago to practice medicine. In 1926 he joined the faculty of Northwestern University Medical School as assistant professor of physical therapy, becoming associate professor in 1932 and chairman of the department and professor of physical medicine in 1943. Dr. Coulter was a member of the Council on Physical Medicine and Rehabilitation of the American Medical Association since 1930 and chairman since 1942, retiring Dec. 2, 1949. He was chairman of the subcommittee on physical therapy of the National Research Council, scientific advisor to the Baruch Committee on Physical Medicine and Rehabilitation, member of the board and secretary of the American Registry of Physical Therapy Technicians, charter member of the American Board of Physical Medicine and Rehabilitation, member of the American Rheumatism Association, and Institute of Medicine of Chicago, past president of the American Society of Physical Medicine, formerly secretary-treasurer of the Society of Physical Therapy Physicians and fellow of the American College of Surgeons. He was treasurer and president of the American Congress of Physical Medicine, which in 1943 awarded him the gold key of merit, and served on the advisory committee of the Parmly Foundation for Auditory Research. During World War I he was a lieutenant colonel in the medical corps of the U. S. Army and in World War II was regional medical officer of civilian defense for Illinois, Michigan and Wisconsin. He was in charge of physical medicine departments at Illinois Central, Michael Reese, St. Luke's, Alexian Brothers, Passavant and Wesley hospitals and was consultant in physical medicine at the Veterans Administration Hospital in Hines, Ill. He was the author of chapters in the "Handbook of Physical Medicine," associate editor of "Principles and Practice of Physical Therapy," a member of the editorial board of *Archives of Physical Medicine* and a contributor to Reimann's "Treatment in General Medicine" (1939), Barr's "Modern Medical Therapy in General Practice" (1940) and Glasser's "Medical Physics" (1943). Dr. Coulter was known for his many interests and his willingness to provide assistance to those who needed it. His contributions to medicine and his leadership in physical medicine long will be remembered by those who knew him personally and will serve as a guide for many who knew him only by name.

JOHN S. COULTER, M.D.

George Morris Dorrance ⊕ Philadelphia; born in Bristol, Pa., April 24, 1877; University of Pennsylvania Department of Medicine, Philadelphia, 1900; member of the founders group of the American Board of Surgery; served as vice chairman of the American Board of Plastic Surgery; fellow of the American College of Surgeons; member of the Philadelphia Academy of Surgery, College of Physicians of Philadelphia, the American Academy of Oral and Plastic Surgery and the American Radium Society; professor of surgery at the Woman's Medical College of Pennsylvania, 1923-1924; later professor of maxillofacial surgery at the Thomas Evans Institute, University of Pennsylvania; served as a major in the medical corps of the U. S. Army overseas during World War I; consultant in oral surgery, State and Montgomery hospitals in Norristown, Pa.; surgeon, Cooper Hospital, Camden, N. J.; medical director and surgeon in chief, American Oncologic Hospital; surgeon at Doctors Hospital; for many years affiliated with St. Agnes' Hospital; chairman of the board, Campbell Soup Company; recipient of the Alvarenga Prize Award of the College of Physicians of Philadelphia in 1929 and the Poor Richard Club Medal of Achievement in 1936; in June 1937 with others received the gold medal of the American Medical Association for an exhibit on normal and abnormal growth; died November 21, aged 72.

Lloyd Noland ⊕ Fairfield, Ala.; born in Gordonsville, Va., July 25, 1880; Baltimore Medical College, 1903; member of the Judicial Council of the American Medical Association from 1935 to 1937 and from 1943 to 1948, member of the House of Delegates from 1942 through 1949 and chairman of the Section on Surgery, General and Abdominal, 1940-1941; member of the founders group of the American Board of Surgery; member, past president and treasurer of the Southern Surgical Association and past president of the Medical Association of the State of Alabama; member and in 1939 vice president of the American Association of Industrial Physicians and Surgeons; member of the Southeastern Surgical Congress, American Association for the Surgery of Trauma and the American Public Health Association; fellow of the American College of Surgeons; executive officer to chief sanitary officer, Isthmian Canal Zone Commission, 1904-1905; chief of the surgical clinic, Isthmian Canal Hospital, Colon, from 1906 to 1913; commissioned an assistant surgeon in the medical reserve corps of the U. S. Navy from 1913 to 1921; served as a member of the state committee of public health; medical superintendent of the Employees' Hospital of Tennessee Coal, Iron and Railroad Company, where he died November 27, aged 69, of pneumonia and arteriosclerotic heart disease.

James Spencer Hough ⊕ Montgomery, Ala.; born in Waterford, Va., Oct. 5, 1873; Georgetown University School of Medicine, Washington, D. C., 1893; member of the American Public Health Association; veteran of the Spanish-American War and World War I; entered public health work in Alabama in June 1920, when he became health officer of Sumter County; he resigned from that position in 1934 to become district medical superintendent in charge of eleven counties; at the time of his death was acting director of the bureau of maternal and child health of the Alabama State Department of Health; at one time assistant medical sanitary inspector of the District of Columbia Health Department, special yellow fever inspector of the U. S. Public Health Service and for many years a member of the foreign staff of the U. S. Public Health Service; died November 10, aged 76, of coronary occlusion.

Stanley Hetfield Nichols ⊕ Asbury Park, N. J.; born in Meriden, Conn., in 1890; University of Pennsylvania School of Medicine, Philadelphia, 1910; instructor in clinical pediatrics at the Post-Graduate Medical School in New York; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; served in the U. S. Navy during World War I; in 1939 received the public health award of the Medical Society of New Jersey for his work as a member of the state board of health; served on the staffs of the Monmouth Memorial Hospital in Long Branch, Fitkin Memorial Hospital, Neptune, and Riverview Hospital at Red Bank; consultant in pediatrics at New Jersey State Hospital, Hillsdale; died November 14, aged 59, of carcinoma.

Henry Draper Jump ⊕ Philadelphia; born in Dover, Del., Oct. 17, 1867; University of Pennsylvania Department of Medicine, Philadelphia, 1893; past president of the Medical Society of the State of Pennsylvania; past president and for many years a member of the board of censors of the Philadelphia County

⊕ Indicates Fellow of the American Medical Association.

Medical Society; emeritus professor of applied therapy at the Woman's Medical College of Pennsylvania; during World War I served in the medical corps of the Army with the rank of major and subsequently resigned from the medical reserve with the rank of lieutenant colonel; consulting physician at the Misericordia Hospital and the Philadelphia General Hospital, where he died November 17, aged 81, of coronary thrombosis.

Wilmer Lawson Allison ✠ Fort Worth, Texas; born in Falls County, Texas, Feb. 3, 1879; University of Texas School of Medicine, Galveston, 1902; past president and treasurer of the Texas Society for Mental Hygiene; past president of the Tarrant County Medical Society; past president and secretary of the Texas Neurological Society; member of the Southern Psychiatric Association and the American Psychiatric Association; formerly on the faculty of Southwestern University Medical College in Dallas; for many years medical superintendent of the Arlington Heights Sanitarium; died October 21, aged 70.

Robert Ewart Ramsay ✠ Pasadena, Calif.; Medical Department of the University of Southern California, Los Angeles, 1917; at one time a minister; an Associate Fellow of the American Medical Association; emeritus professor of pediatrics at the College of Medical Evangelists; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; fellow of the American College of Physicians; formerly vice president of the Southern California Medical Association; affiliated with Collis P. and Howard Huntington Memorial Hospital; died September 19, aged 73.

Thomas Leslie Lee ✠ Kinston, N. C.; born in Kinston, N. C., May 24, 1901; Medical College of Virginia, Richmond, 1926; specialist certified by the American Board of Obstetrics and Gynecology; member of the Southeastern Surgical Congress and South Atlantic Association of Obstetricians and Gynecologists; past president and vice president of the Seaboard Medical Association; fellow of the American College of Surgeons; since 1936 chairman of the North Carolina State Cancer Committee; affiliated with Memorial General Hospital; died recently, aged 48.

Charles Clinton Adair, Bonham, Texas; Hospital College of Medicine, Louisville, 1890; died in October, aged 85.

Owen Frank Agee, New Orleans; University of Tennessee College of Medicine, Memphis, 1925; member of the American Medical Association and American Public Health Association; lecturer in medicine at Tulane University of Louisiana School of Medicine; served during World War I; director of preventive medicine for the state health department; formerly director of the Blount County (Tenn.) Medical Society; died in Touro Infirmary November 6, aged 51, of coronary infarction.

Everett Hubert Atkinson, East Lansing, Mich.; Ohio State University College of Medicine, Columbus, 1929; affiliated with the student health service at Michigan State College; died November 13, aged 46, of coronary occlusion.

John M. A. Baasen ✠ Mount Calvary, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1903; served during World War I; an associate member of the staff of St. Agnes' Hospital in Fond du Lac; died in Fond du Lac October 9, aged 71, of uremia and interstitial nephritis.

Donald Tisdale Babcock ✠ Los Angeles; Emory University School of Medicine, Atlanta, 1921; member of the American Academy of Orthopedic Surgeons; fellow of the American College of Surgeons; assigned to the China-India-Burma area during World War II; on the attending staff of Hollywood, French, Methodist, Queen of Angels and Los Angeles General hospitals; member of the senior staff, orthopedics, California Hospital, where he died November 2, aged 52, of acute pancreatitis.

Edwin H. Bosse ✠ St. Louis; St. Louis Medical College, 1886; affiliated with Deaconess Hospital, where he died November 6, aged 79, of carcinomatosis.

John Joseph Brosnahan, Keene, N. H.; University of Vermont College of Medicine, Burlington, 1913; member of the American Medical Association; served as city physician, county physician and on the city board of health; examining physician for the local draft board during World War II; affiliated with Elliot Community Hospital; died October 29, aged 63, of myocarditis.

Cunningham Powers Clark, Philadelphia; Jefferson Medical College of Philadelphia, 1895; member of the American Medical Association; died November 11, aged 77.

Andrew Haven Cleveland ✠ Clayton, Mo.; Boston University School of Medicine, 1910; formerly on the faculty of St. Louis University School of Medicine; died in the Veterans Administration Hospital in Jefferson Barracks November 6, aged 66, of heart disease.

Robert Harvey Cook, Oxford, Ohio; Medical College of Ohio, Cincinnati, 1894; member of the American Psychiatric Association; died November 24, aged 78.

Kearan C. Cummins ✠ Maryville, Mo.; Northwestern Medical College, St. Joseph, 1892; affiliated with St. Francis Hospital, where he died November 1, aged 82, of congestive heart failure.

Charles Hall Dixon ✠ Wichita, Kan.; Washington University School of Medicine, St. Louis, 1907; served on the staff of Wesley Hospital; died November 2, aged 66, of carcinoma of the lungs.

Lawrence Michael Drennan, Washington, D. C.; Georgetown University School of Medicine, Washington, 1906; fellow of the American College of Surgeons; died November 18, aged 64.

Edgar Ellington, Lake City, Ark.; Memphis (Tenn.) Hospital Medical College, 1913; died in November, aged 68.

Clara Pauline Fitzgerald, Worcester, Mass.; Woman's Medical College of Pennsylvania, Philadelphia, 1897; member of the American Medical Association, American Academy of Dermatology and Syphilology and New England Dermatological Society; on the staff of St. Vincent Hospital; died November 3, aged 73, of chronic nephritis and uremia.

Robert Lee Fogle, Otterville, Mo.; St. Louis University School of Medicine, 1903; member of the American Medical Association; served during World War I; died in the John H. Bothwell Hospital, Sedalia, October 26, aged 70, of heart disease.

Horace Mangole Fooder ✠ Williamstown, N. J.; Medico-Chirurgical College of Philadelphia, 1908; formerly state senator; died in Lankenau Hospital, Philadelphia, October 28, aged 65, of uremia and nephrosclerosis.

Andrew Jackson Fox, New York; Bellevue Hospital Medical College, New York, 1884; member of the American Medical Association; for many years associated with the Equitable Life Assurance Society of the United States; died in Camden, Maine, November 3, aged 92.

Morton Raymond Gibbons ✠ San Francisco; Cooper Medical College, San Francisco, 1897; past president of the California Medical Association; served on the faculty of his alma mater and the Stanford University School of Medicine; captain and later major in the medical corps of the U. S. Army during World War I; medical director, industrial accident commission of California from 1913 to 1933; formerly chairman of the city medical milk commission; died in Stanford University Hospital November 8, aged 76.

Walter Robert Grunewald, Mayfield, N. Y.; Albany (N. Y.) Medical College, 1912; member of the American Medical Association; for many years county coroner; died November 10, aged 60.

Rocco Dominick Guido, Clinton, N. Y.; Syracuse University College of Medicine, 1929; member of the American Medical Association; school physician and health officer; died November 10, aged 46, of coronary heart disease.

Garrett John Hagens, Chicago; Chicago Medical College, 1891; member of the American Medical Association; fellow of the American College of Surgeons; affiliated with Chicago Lying-In Hospital and Englewood Hospital; died November 13, aged 81, of cerebral thrombosis and arteriosclerosis.

Lawrence Vance Hanlon Jr., Brooklyn; Long Island College Hospital, Brooklyn, 1923; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; served during World War I; affiliated with Caledonia Hospital, Kingston Avenue Hospital and Methodist Hospital; died in the Presbyterian Hospital, New York, November 12, aged 52, of hypertensive heart disease.

Rosslyn Philip Harris ✠ Hudson, N. Y.; Albany (N. Y.) Medical College, 1908; past president of the Columbia County Board of Health and the Columbia County Medical Society; member of the Radiological Society of North America; served as president of the Tuberculosis Eradication Association of Columbia County; vice president of the Hudson River Trust Company; affiliated with Columbia Memorial Hospital, where he died October 26, aged 66.

Charles Cyrus Hatfield, Kingston, Ohio; Starling Medical College, Columbus, 1894; served during World War I; died in the Veterans Administration Hospital, Chillicothe, October 30, aged 82, of cerebral hemorrhage.

Emil J. Heinig ✠ Vermilion, Ohio; Western Reserve University Medical Department, Cleveland, 1898; died in Cleveland Clinic October 29, aged 73, of pneumonia.

Lester Mead Hubby ✠ New York; New York University Medical College, 1896; specialist certified by the American Board of Otolaryngology; member of the American Laryngological, Rhinological and Otological Society and American Otological Society; fellow of the American College of Surgeons; served during World War I; affiliated with Harlem Hospital and the Manhattan Eye, Ear and Throat Hospital; died November 10, aged 78, of carcinoma.

Edward J. Jasper ✠ Astoria, Ore.; University of Oregon Medical School, Portland, 1918; died in a hospital at Portland October 29, aged 59.

Samuel B. Johnson, Franklin, W. Va.; University of Maryland School of Medicine, Baltimore, 1892; member of the American Medical Association; died November 8, aged 82, of heart disease.

Ralph Richards Jones, Toms River, N. J.; Jefferson Medical College of Philadelphia, 1896; health officer; school physician for various schools; medical examiner for life insurance companies; vice president and director of the First National Bank; died October 15, aged 79, of arteriosclerosis and myocarditis.

Robert Alderson Jones, Perry, Ark.; Memphis (Tenn.) Hospital Medical College, 1903; member of the American Medical Association; local surgeon for the Rock Island Railroad; died October 8, aged 76, of cerebral hemorrhage.

Daniel John Keelan, Montgomery, Vt.; University of Vermont College of Medicine, Burlington, 1905; member of the American Medical Association; past president of the Franklin County Medical Society; on the school board; served as president of the Enosburg Falls National Bank; died November 17, aged 69.

William Klein, New York; Albertus-Universität Medizinische Fakultät, Königsberg, Prussia, Germany, 1905; died October 9, aged 68, of heart failure.

Richard Van Dyck Knight, Summit, N. J.; Columbia University College of Physicians and Surgeons, New York, 1937; member of the American Medical Association; died in the Harkness Pavilion, New York, October 30, aged 39, of uremia and hypertension.

George Albert Lane Jr., Rochester, N. Y.; University of Buffalo School of Medicine, 1896; served during World War I; died October 31, aged 74, of carcinoma of the liver.

Franklin Dana Lawson, New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1890; affiliated with New York and Polyclinic hospitals; died October 26, aged 83.

Robert Jones McGuinness ✠ Tiburon, Calif.; Jefferson Medical College of Philadelphia, 1920; member of the Ohio State Medical Association; for many years practiced in Columbus, Ohio; died in a hospital at San Francisco, November 3, aged 55, of leukemia.

James Bernard McKenzie, New York; University of Vermont College of Medicine, Burlington, 1895; died September 21, aged 75, of coronary arteriosclerosis.

Joseph Owen McKeon ✠ San Angelo, Texas; University of Minnesota Medical School, Minneapolis, 1915; member of the Minnesota State Medical Association; died November 10, aged 57, of coronary thrombosis.

Lindus Cody Marsh, Tucson, Ariz.; Albany Medical College, 1929; certified by the National Board of Medical Examiners; member of the American Psychiatric Association; formerly affiliated with Worcester (Mass.) State Hospital and Kings Park (N. Y.) State Hospital; died November 4, aged 66.

Robert Somers Marshall, Pittsburgh; Hahnemann Medical College and Hospital of Philadelphia, 1890; served the Shadyside Hospital in various capacities; died November 3, aged 83.

Charles Peter Martin, St. Louis; St. Louis University School of Medicine, 1904; member of the American Medical Association; affiliated with Missouri Baptist and Christian hospitals; died November 12, aged 69.

Charles O. Mays, Liberal, Kan., University of Nashville (Tenn.) Medical Department, 1907; died September 1, aged 68.

Albert C. Menger, Philadelphia; Medico-Chirurgical College of Philadelphia, 1894; died in Lankenau Hospital November 13, aged 77, of gangrene of the right leg due to arteriosclerosis.

Elmer Delmont Merrill ✠ Dover-Foxcroft, Maine; Hahnemann Medical College and Hospital of Philadelphia, 1886; served as honorary president of the Maine Public Health Association; past president of the Maine Medical Association and Piscataquis County Medical Society; for three terms representative to the state legislature; affiliated with Mayo Memorial Hospital; died September 7, aged 84, of coronary disease.

Clarence Edmond Mullens, Albany, N. Y.; Albany Medical College, 1912; member of the American Medical Association and the American Association of Industrial Physicians and Surgeons; served during World War I; at one time member of the medical board of the State Employees Retirement System; affiliated with Memorial Hospital, where he died November 9, aged 60.

Adolphus J. W. Nixon, Detroit; Detroit College of Medicine, 1891; served as physician to St. Johns Military Academy at Delafield, Wis.; died October 21, aged 77.

Lee Norman, Louisville, Ky.; Southwestern Homeopathic Medical College and Hospital, Louisville, 1905; died October 9, aged 79, of gastroenteritis.

Nishan Alexander Pashayan ✠ Schenectady, N. Y.; Albany Medical College, 1901; specialist certified by the American Board of Psychiatry and Neurology; past president of the Schenectady County Medical Society; affiliated with Ellis Hospital; died October 28, aged 76.

Herbert Roscoe Pearson, West Milton, Ohio; Baltimore Medical College, 1893; member of the American Medical Association; past president of the Miami County Medical Society; president of the Citizens National Bank; died September 25, aged 81, of pulmonary embolism following a prostatectomy.

Frank Clayton Peirsol, Claremont, Calif.; California Medical College, San Francisco, 1895; College of Physicians and Surgeons of San Francisco, 1900; died September 14, aged 79.

Allen Armistead Perkins ✠ Norfolk, Va.; Hahnemann Medical College and Hospital of Philadelphia, 1914; member of the staffs of the Leigh Memorial, Norfolk General and De Paul hospitals; died October 29, aged 59.

Irving Perlman, Chicago; Chicago Medical School, 1929; member of the American Medical Association; died in the Illinois Masonic Hospital November 19, aged 48, of coronary occlusion and diabetes mellitus.

Cincinnatus Dickson Powell, Crowville, La.; Memphis (Tenn.) Medical College, 1908; died in New Orleans September 12, aged 66.

Clarence Scott Ramsey, Springfield, Ohio; Jefferson Medical College of Philadelphia, 1900; member of the American Medical Association; for many years head of the department of obstetrics at Springfield City Hospital; died November 15, aged 74, of coronary artery disease.

S. Albert Francis Richmond, Onekama, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1881; died in the Anna Markham Memorial Hospital, Frankfort, October 27, aged 92.

Edward Warren Ripley ✠ Delaware City, Del.; Cornell University Medical College, New York, 1919; member of the Medical Society of New Jersey; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; affiliated with Essex County Hospital for Contagious Diseases, Belleville, and Mountainside Hospital, Montclair; pediatrician at Governor Bacon Health Center, where he died October 13, aged 60, of coronary infarction.

Horace Greely Rollans, Little Rock, Ark. (licensed in Arkansas in 1906); died October 1, aged 76.

Augusta Moore Rothwell, Athens, Ga.; Gross Medical College, Denver, 1900; died August 31, aged 91, of senility.

Iner Sheld-Ritchie, Riverside, Calif.; College of Medical Evangelists, Loma Linda and Los Angeles, 1915; member of the American Medical Association; died in October, aged 64.

Lewis Eli Stephenson ✠ Michigan City, Ind.; Medical College of Indiana, Indianapolis, 1905; past president of the La Porte County Medical Society; affiliated with St. Anthony Hospital where he died October 24, aged 70, of coronary occlusion.

John Dilworth Stroud ✠ Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1908; member of the staff of De Paul Hospital; died October 25, aged 64.

Stanley Eugene White, Athens, Pa.; Jefferson Medical College of Philadelphia, 1945; interned at the Medical Center of Jersey City in Jersey City; formerly a captain in the medical corps, Army of the United States; died in Aruba, Netherlands, West Indies, August 15, aged 33, of heart disease.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Oct. 30, 1949.

Centennial of the Medical Society of the Paris Hospitals

The Medical Society of the Paris Hospitals held a meeting on October 21 and 22 in the lecture hall of the Faculty of Medicine. The Minister of Public Health, L. Binet, dean of the faculty, Trefouel, director of the Pasteur Institute, and other prominent persons were present. Professor Valery-Radot, president of the society, reviewed the history of French medicine for the past one hundred years. Dr. Rist, president of the centenary committee and former president of the society, reviewed the history of the society. Tributes of respect from friendly scientific societies and foreign universities were delivered by their delegates.

SCIENTIFIC MEETINGS

In various Paris hospitals scientific reports were read. The following topics were included.

A New Technic of Angiopneumography.—Angiopneumography was first done by Lopo de Carvalho (Lisbon Faculty of Medicine) in 1931. With a new technic the injection into the vena jugularis externa of 20 cc. of an opaque product (opaxil) permits visualization the the pulmonary arteries. This technic is simple and can be used also in angiocardiographic examinations; the author uses a simple apparatus that permits the use of six to eight successive films at various intervals. The apparatus consists essentially of an octagonal prism, on the lateral faces of which are eight loaded plate sheaths.

Eosinophilic Granuloma.—Carlos Salazar de Souza (Lisbon Faculty of Medicine) reported several cases of multiple osseous granuloma of the eosinophilic type which were observed in Portugal. The author stressed that because of lack of more precise information concerning the etiologic aspects of the disease, which is characterized by reticuloendothelial proliferations, it is difficult to decide whether eosinophilic granuloma should be considered a special pathologic entity.

Pathogenic Role of Verminous Toxic Substances.—R. Deschiens (Society of Exotic Pathology) explained that the pathogenic or reactive factors of substances extracted from helminths may be studied experimentally by the intoxication or sensitization of animals (guinea pig, rabbit, cat). Chronic intoxication by verminous toxic substances can be compared to that produced by histamine hydrochloride; the blood, spleen, kidneys and lungs are particularly affected. The verminous toxic substances are present especially in the bases and amino acids and do not appear to be identifiable with histamine. Substances producing allergy, anaphylaxis and eosinophilia are to be found in proteins with large molecules and certain glucidolipidopolypeptidic complexes. Rachet, Guy Laroche, Chiray and Paraf are of the opinion that the data yielded by experimental works are not applicable in clinical work. Attention is drawn to the epileptiform crises, possibly related to lambliasis.

Sensitivity to Vibration in Neuroanemic Syndromes.—P. Michon and Houchard (Medical Society of Nancy) discussed reactions to vibration. Their observations have shown that sensitivity to vibration is of importance in neuroanemic syndromes.

Congress of Allergy

The Congress of Allergy will take place on May 31 and June 1, 1950 at the propedeutic clinic of the Broussais Hospital (president, Prof. Pasteur Valery-Radot). Sir Henri Dale, Bickel (Switzerland), Pasteur Valery Radot, Tzanck and Halpern, among others, will report on the importance of cutaneous or intradermic reactions in the diagnosis of allergic conditions; importance of hemoclasia and eosinophilia in the diagnosis of allergic conditions, allergic antibodies, microbian allergic antibodies, crossed sensitizations, synthetic antihistaminics and treatment of allergic conditions with specific desensitization and without it. The general secretariat is Docteur Blamoutier, 5 rue de Luynes, Paris 7.

Certificate of Specialization in Pneumophthisiology

A new certificate of special study of pneumophthisiology was created on Oct. 12, 1949. Studies for two years, embracing conferences and practice work, and two years of clinical practice will be required. The examination includes written and clinical tests. The conditions of admission are similar to those for other certificates of specialties recently created.

First European Televised Operation

On Oct. 7, 1949, at the Children's Hospital (Hôpital des Enfants malades), an operation consisting of the resection and the reconstruction of the hip was televised to the lecture hall of the hospital. This sensational event was the first of its kind in Europe.

Teaching Film

"Parkinson's Disease," a medical teaching film made by the Society of Cinematographic Applications, was awarded the first international prize of the section on medical sciences at the tenth biennial meeting in Venice in August 1949.

Degree of Doctor "Honoris Causa"

The Lyons University has awarded the degree of Doctor Honoris Causa to Dr. Karl K. Darrow, secretary of the American Physical Society of New York, and to M. Bessemans, director of the Ghent Institute of Hygiene and Bacteriology.

ITALY

(From Our Regular Correspondent)

FLORENCE, Oct. 31, 1949.

Health Problems Discussed in Parliament

Various health problems are now under consideration in the house of representatives and in the senate in Italy. Senator Merlin, a woman, presented a bill which aims at the abolition of the present regularization of prostitution and of the exploitation of prostitution by others. The proposed bill forbids the social security and public health officials to register women who practice prostitution. The bill also provides for the announcement of the number of cases of syphilis observed at the institutes for treatment as well as of the names of syphilitic persons who refuse or discontinue treatment. The principle of free ambulatory treatment in dispensaries has been confirmed, and compulsory hospitalization is forbidden. If this bill becomes law, all the authorized brothels will be closed and institutions for the reeducation of prostitutes will be created.

The Merlin bill is of great ethical and social interest, but from the point of view of public health it must be considered with reserve and it has caused considerable reaction in the medical profession.

Another problem discussed in the senate is the strengthening of the National Maternity and Child Welfare Foundation. Because of the increased confidence which the working masses have shown for this institution, the government has been asked to increase the assignment of funds for the welfare foundation to 5,000 million lire per year, and to assign an additional 1,000 million lire for maternity and child welfare in the southern part of the country and on the islands.

The government has been invited to present a bill for the formation of a ministry of hygiene and public health which may

be a substitute for the present office of the high commissioner. Another proposal was in favor of supporting tuberculous patients in sanatoriums and in their homes.

Vaccination Against Tuberculosis

At a recent meeting in Verona, antituberculous vaccination was the subject of a historical report by Professor Costantini, who discussed the work of Maragliano and summarized the results obtained by the latter with vaccines prepared from killed bacilli and the successive development of this method by Professor Salvioli. Professor Celotti of Udine reported on the application of Calmette's method of vaccination which is based on the use of living bacilli.

Of the various methods of administration of BCG vaccine preference is given to the Danish method by intradermal injection and to the French method by scarification. Professor Celotti discussed the constancy of BCG, reporting the points of view of the Pasteur Institute of Paris and of the Health Institute of Copenhagen; he stated that one has to deal with a change in vitality but not with a change in virulence.

On the basis of statistics on thousands of persons who had been vaccinated at the center in Bologna, Professor Salvioli asserted that it is advisable to use four inoculations for the vaccination of newborn infants, if one considers that for the purpose of immunization they must receive a high bacterial charge and must have considerable tissue reactions. A single inoculation may be sufficient in children over 1 year of age. He is convinced of the superiority of the vaccine made from killed bacilli over that made from living bacilli. This concept is shared by several foreign immunologists.

Professor Salvioli agreed with Professor Borsarelli's statement that infants should be vaccinated at birth; he is convinced of the advisability of large scale vaccination of newborn infants but of vaccination of only those adults who particularly may be exposed to infection. He looked with favor on an experimental application of the two methods (Calmette and Petragnani-Salvioli) in two different localities and to an equal number of persons who should be examined frequently by health officers who can be trusted to carrying out such delicate tasks.

Professor Salvioli concluded his report by reasserting his opposition to mass vaccination against tuberculosis in Italy and by emphasizing that the voluntary vaccination of newborn infants on a large scale represents the ideal prophylaxis against tuberculosis.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Oct. 27, 1949.

Experimental South American Blastomycosis

The experimental reproduction of South American blastomycosis would be of practical interest, particularly as a means of testing the in vivo activity of chemotherapeutic drugs and antibiotics on Paracoccidioides brasiliensis. Until recently, the only successful inoculation of the parasite in laboratory animals was achieved by J. Montenegro, who was able to produce local lesions on the orchis of guinea pigs after testicular inoculation of contaminant material from patients or from cultures. After two months the specific orchitis yielded many parasites, but there was never a generalized infection. After several trials, F. Almeida was able to induce specific skin lesions with testicular inoculation. Using the peritoneal and venous routes, Carlos S. Lacaz, of the Department of Microbiology and Immunology of the São Paulo University, succeeded recently in causing a systemic infection in mice, after inoculation of cerebriform cultures of P. brasiliensis in a concentrated germ suspension. This generalized infection presented a certain uniformity with lesions localized especially in the spleen, liver, lungs and lymph nodes. The lesions are of the septicemic type and resemble those of experimental tuberculosis of rabbits inoculated intravenously, the blastomycotic nodules presenting an abundance of parasites. The mice died long after the inoculation; the author suggests that the cold environment was a probable contributing cause of death through the diminution of the animals' resistance.

These first experimental results of generalized blastomycosis will be the basis for further investigations concerning the therapeutic value of drugs, vaccines, serums and antibiotics on P. brasiliensis. It seems that the parasites do not act through a soluble exotoxin, otherwise the mice would have died soon after the micro-organism inoculation. With the inoculation of blastomycotic pus through the tracheal route the author reproduced in a guinea pig an experimental lesion localized in the lung apex in which parasites identical to P. brasiliensis were found. After the inoculation by the peritoneal route there is a smaller number of blastomycotic nodules in the peritoneal cavity and in the lungs than after the inoculation by the venous route.

A Survey of Hospitals

The total number of hospitals in Brazil as of Dec. 31, 1948, is 1,631, with 133,784 beds, or an average of one bed for every 344 inhabitants. The best served section of the country is the Federal District, a metropolitan area including the city of Rio de Janeiro and its environs, which has 22,441 beds, or one bed for every 89 inhabitants. After the Federal District come the states of Rio Grande do Sul (19,945 beds, or one bed for 191 inhabitants), São Paulo (38,762 beds, or one bed for 214 inhabitants), Paraná (5,103 beds, or one for 226 inhabitants) and Rio de Janeiro (6,547 beds, or one bed for 321 inhabitants). Several of the less populated states have a ratio of one bed for every 1,000 or 2,000 inhabitants. Three states with large populations, Minas Gerais, Pernambuco and Bahia, have only one bed for every 405, 475 and 835 inhabitants, respectively. The federal government maintains 23,823 of these beds, state governments 38,921, municipal governments 1,874 and private organizations 69,166. There are 49,678 beds in general hospitals, 4,013 in maternities, 5,215 in hospitals for children, 21,546 in leper hospitals, 26,831 in neurologic and psychiatric hospitals, 14,312 in tuberculosis hospitals and 12,189 in military hospitals.

Cancer Prevention Clinic

A cancer prevention clinic for women was started on an experimental basis at the department of gynecology of the University of Rio de Janeiro by Prof. Arnaldo de Morais. The announcement that the clinic was to be opened, for one day a week, was made through newspapers and radio stations. Drs. J. P. Rieper and H. Stoltz, in charge of the clinic, have just reported some data from the first six months of activity. In the twenty weekly sessions, 350 women visited the clinic and were given complete breast and gynecologic examinations, including colposcopy and colpocytologic study. In 68 cases a biopsy was performed. Only 28 healthy women visited the clinic for preventive examination; all the others presented abnormal symptoms of variable importance and significance. Of the 350 women, 31 had cancer of the uterine cervix and 3 had cancer of the breast. Among the 31 cases of uterine cancer, 3 were of type I, 4 of type II, 16 of type III and 8 of type IV. All 3 breast cancers were type III. Colposcopy, colpocytologic examination and biopsy contributed variously to the final diagnosis: in 11 cases the diagnosis was considered confirmed by the agreement of the three methods; in 11, diagnosis was confirmed by the agreement of results of colposcopy and biopsy; in 12, diagnosis was considered confirmed by agreement of results of colpocytologic examination and biopsy. In several cases considered suspect from the results of colposcopy and/or colpocytologic examination, biopsy will be performed to permit a final diagnosis. The authors consider the experiment promising.

Correspondence

PENICILLIN AND BLACK HAIRY TONGUE

To the Editor:—I should like to report another case of black hairy tongue which apparently resulted from oral administration of penicillin troches. Mrs. H. H. D., age 58, was seen Oct. 21, 1949 with a chief complaint of sore throat and feverishness for forty-eight hours. The physical examination revealed moderate pharyngitis and oral temperature of 100 F. but no other significant physical findings.

Medication consisted of penicillin troches, 50,000 units every three hours during waking hours, and acetylsalicylic acid, 1 tablet when required for discomfort. Three days later, after having taken 18 troches, the patient returned for check-up. The throat and temperature were normal. The tongue was noted to be normal in color. Six days later, the patient stated by telephone that after her previous return visit, sore throat had again developed and that she had purchased 24 penicillin troches and had used them according to previous directions. After having taken half the troches, she noted a black discoloration of the tongue, almost to the anterior tip. Twenty-four hours later (she was still taking penicillin troches) she noted that the tongue was black to the tip. She consulted me the following day. The tongue was found to be brownish black with hairlike projections over the visible portion of the dorsum of the tongue. Penicillin therapy was discontinued. One week later there was some clearing of the tongue. At this writing the tongue has almost completely cleared. No medication has been given since discontinuation of the penicillin troches.

WILLIAM E. OVERMAN, M.D., Tucson, Ariz.

To the Editor:—I read with great interest the paper on "Black Hairy Tongue Associated with Penicillin Therapy" by S. A. Wolfson (J. A. M. A. [Aug. 13] 1949, p. 206). I should like to draw attention to the observations of Doxiades and Tiliados (*Schweiz. med. Wchnschr.* **86**:1041 [Oct.] 1948). These authors observed black tongue in avitaminosis of human beings. The avitaminosis was complicated by other diseases, such as duodenal ulcer, complete paresis and Wernicke syndrome, disturbances of the digestive tract, furuncular myelosis and pernicious anemia. Administration of riboflavin precipitated the onset of the hairy tongue symptom. Treatment with vitamin B_1 plus nicotinamide or vitamin B complex cured the symptom.

Could penicillin treatment increase the requirements of the organism for vitamin B complex?

DR. VAN KLAVEREN,
Scientific Department, Teddington Chemical Factory, Ltd., Bombay, India.

METHEMOGLOBINEMIA IN INFANTS

To the Editor:—In regard to your editorial on "Methemoglobinemia in Infants" (Oct. 22, 1949, page 534), I believe that some important facts are being overlooked. One must consider the effects of the aniline dyes contained in the wax crayons and the nitrates in the well water not only on the hemoglobin but also on the cellular respiratory system.

You state that methylene blue will itself cause methemoglobinemia and that its administration would seem illogical except that it is clinically effective. If one examines the role of methylene blue in an oxidation-reduction system one finds that it replaces cytochrome. As you state, "Methylene blue itself is transformed into the leuco form, which in turn reacts with oxygen and forms again methylene blue." The methylene blue is reduced to the leuco form by taking part in the oxidation-reduction system found in all cells. Probably experiment would show that the cytochrome is also inactivated by these poisons, with its resultant anoxia. It would also be interesting to inject cytochrome itself, since it is now commercially available for human use, to see whether the anoxia is improved as well as with methylene blue. This would not only help to demonstrate the foregoing point but also provide a new method of treatment.

Methylene blue has the same specific antidotal effect on organisms that have no hemoglobin system, such as bacteria, when poisoned by cyanides or other catalase poisons.

NATHAN BRODY, M.D., Forest Hills, N. Y.

Medical Motion Pictures

FILM REVIEWS

The Surgical Treatment for Congenital Pyloric Stenosis. 16 mm., color, silent, 345 feet, showing time fourteen minutes. Prepared in 1949 and procurable on loan or purchase from Philip Thorek, M.D., 25 East Washington Street, Chicago 2.

This motion picture shows a child, 3 weeks of age, with a typical history of congenital hypertrophic pyloric stenosis. The history is reviewed, and the loss of weight, dehydration and abdominal distention are well depicted by the patient's being shown before operation. A roentgenogram of the stomach made after oral administration of barium is shown, which reveals a decidedly dilated stomach and complete pyloric obstruction.

The technic of performing a Ramstedt pyloroplasty is well shown, and the pathology well demonstrated. At the end of the film, the patient is shown three weeks after operation, at which time the child is taking a full formula without any regurgitation and the abdominal wound is well healed.

The film can be recommended as an adjunct to a lecture at county medical societies and for residents, interns and medical students.

In general, the photography is good. However, scenes of the patient before and after operation are considerably overexposed.

Council on Medical Education and Hospitals

NEW HOSPITALS REGISTERED

The following hospitals were registered by the Council on Medical Education and Hospitals of the American Medical Association at its meeting in Washington, D. C., Dec. 4, 1949:

Norman Hospital, Casa Grande, Ariz.
Pines Sanatorium, Prescott, Ariz.
Alondra Nursing Home, Gardena, Calif.
La Mesa Community Hospital, La Mesa, Calif.
Ridgecrest Hospital, Ridgecrest, Calif.
Yuba City Community Hospital, Yuba City, Calif.
Chicago Physicians and Surgeons Hospital, Chicago
Kenner Hospital, Chicago
Mansion Nursing Home, Dixon, Ill.
Wood River Township Hospital, Wood River, Ill.
Fowler Community Hospital, Fowler, Kansas
Wayside Hospital, Lexington, Ky.
Graves Infirmary, Scottsville, Ky.
De Quincy Hospital, De Quincy, La.
Our Lady of Lourdes Hospital, Lafayette, La.
St. Elizabeth Hospital, Paincourtville, La.
Allen Memorial Hospital (Carleton College), Northfield, Minn.
St. Olaf College Hospital, Northfield, Minn.
Memorial Hospital, Lamar, Mo.
Chico Hot Springs Hospital, Pray, Mont.
Fairbury Clinic and Hospital, Fairbury, Neb.
Seeley Memorial Hospital, Minden, Neb.
St. Clare's Hospital, Schenectady, N. Y.
Watauga Hospital, Boone, N. C.
Wilkes County Tuberculosis Hospital, North Wilkesboro, N. C.
Ephrata Community Hospital, Ephrata, Pa.
Erie Infants' Home and Hospital, Erie, Pa.
Seidle Memorial Hospital, Mechanicsburg, Pa.
Parkview Hospital, Chattanooga, Tenn.
Baptist Hospital, Beaumont, Texas
Hemphill County Memorial Hospital, Canadian, Texas
Dimmit County Memorial Hospital, Carrizo Springs, Texas
Dr. Stell's Eye, Ear, Nose and Throat Clinic-Hospital, Dallas, Texas
Yoakum County Hospital, Denver City, Texas
Hillsboro Clinic-Hospital, Hillsboro, Texas
Karnes County Hospital, Karnes City, Texas
Memorial Hospital, Lufkin, Texas
Weaver H. Baker Memorial Tuberculosis Sanatorium, Mission, Texas
Ector County Hospital, Odessa, Texas
Premont Hospital, Premont, Texas
Rusk Memorial Hospital, Rusk, Texas
Dolly Vinsant Memorial Hospital, San Benito, Texas
Trinity Memorial Hospital, Trinity, Texas
Youens Hospital, Weimar, Texas
Memorial Hospital, Rawlins, Wyo.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. *Part III.* Boston, Chicago and New York, January. *Parts I and II,* Feb. 13-15. Centers where there are approved medical schools and five or more candidates. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th Street, Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations. July 21. *Oral.* Philadelphia, April 23-27, Chicago, Oct. 8-11. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Chicago, Feb. 8-10. Boston, April 13-15. San Francisco, June 21-23. The oral examinations in the subspecialties will be held at the same time and places. Final date for filing applications for all examinations is Jan. 1. Asst. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC. *Written and Reviews of Case Histories. Part I.* Various Centers. Feb. 3. *Oral Part II.* Atlantic City, May 21-28. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, January 1951. Final date for filing applications is July 1, 1950. *Oral.* Boston, May 22-26 and Chicago, Oct. 2-7. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part II,* New York City, Feb. 9-10. Sec. Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* San Francisco, May. Chicago, October. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Written.* Various locations. Jan. 12. *Oral.* Richmond, Va., Feb. 10-12.; Philadelphia, March 31-April 2; San Francisco, June 23-25. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PLASTIC SURGERY: *Oral.* May-June. Sec., Dr. Louis T. Byars, 4647 Pershing Avenue, St. Louis, Mo.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH: *Oral and Clinical.* Chicago, Feb. 7-8. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe Street, Baltimore 5, Md.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Spring Examination. Date and location of examination to be announced later. Final date for filing applications is Feb. 1. Sec., Dr. F. J. Braceland, 102-110 Second Ave. S.W., Rochester, Minnesota.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, week of June 18. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 21.

BOARD OF THORACIC SURGERY: *Written.* Various locations. Jan. 16. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2, Mich.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

ALASKA: Juneau, March 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARIZONA: * *Examination.* Phoenix, Jan. 17-18. *Reciprocity.* Phoenix, Jan. 21. Sec., Dr. J. H. Patterson, 316 W. McDowell Road, Phoenix.

ARKANSAS: * *Examination.* Little Rock, June 8-9. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, June 8-9. Sec., Dr. Clarence H. Young, 1415 Main Street, Little Rock.

CALIFORNIA: *Examination, Written.* Los Angeles, Feb. 27-March 2; San Francisco, June 19-22; Los Angeles, Aug. 21-24; Sacramento, Oct. 16-19. *Examination, Oral and Clinical, for Foreign Medical School Graduates.* Los Angeles, Feb. 26; San Francisco, June 18; Los Angeles, Aug. 20; San Francisco, Nov. 12. *Reciprocity, Oral Examination.* Los Angeles, Jan. 21; Los Angeles, Feb. 25; San Francisco, June 17; Los Angeles, Aug. 19; San Francisco, Nov. 11. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * Denver, Jan. 3-6. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

CONNECTICUT: * *Examination.* Hartford, March 14-15. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven. *Homeopathic.* Derby, March 9-10. Sec., Dr. Donald A. Davis, 38 Elizabeth Street, Derby.

DELAWARE: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

GEORGIA: *Examination.* Atlanta and Augusta, June. *Endorsement.* Atlanta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

GUAM: *Endorsement.* Agana, last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

HAWAII: *Examination.* Honolulu, Jan. 9-12. Sec., Dr. I. L. Tilden, 881 S. Hotel St., Honolulu.

IDAHO: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

ILLINOIS: Chicago, Jan. 10-12. Superintendent of Registration, Mr. Charles F. Kervin, Capitol Building, Springfield.

INDIANA: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

MAINE: Portland, March 14-15. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

MASSACHUSETTS: *Examination.* Boston, March 14-17. Sec., Dr. George L. Schadt, 413 E. State House, Boston.

MINNESOTA: * Minneapolis, Jan. 17-19. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Building, St. Paul 2.

MISSOURI: *Examination.* Jefferson City, Feb. 9-11. *Reciprocity,* Feb. 4. Exec. Sec., Mr. John A. Hailey, Box 14, State Capitol Building, Jefferson City.

MONTANA: Helena, April 3-5. Sec., Dr. Otto G. Klein, First National Bank Building, Helena.

NEVADA: Carson City, May 1. Sec., Dr. George H. Ross, 112 Curry Street, Carson City.

NEW HAMPSHIRE: Concord, March 8-9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 20-23. Sec., Dr. E. S. Hallinger, 28 West State Street, Trenton.

NEW MEXICO: * Santa Fe, April 10-11. Sec., Dr. Charles J. McGoey, Coronado Building, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 31-Feb. 3. Sec., Dr. Jacob L. Lochner, 23 S. Pearl Street, Albany 7.

NORTH CAROLINA: *Endorsement.* Raleigh, Jan. 23. Sec., Dr. Ivan Procter, 226 Hillsboro St., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 4-6. *Reciprocity.* Jan. 7. Sec., Dr. C. J. Glaspel, Grafton.

OKLAHOMA: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

OREGON: * *Examination.* Portland, Jan. 5-7. *Reciprocity.* Portland, Jan. 20-21. Exec. Sec., Mr. Howard I. Bobbitt, 609 Failing Building, Portland 4.

PENNSYLVANIA: *Examination.* Philadelphia or Harrisburg, Jan. 23-25. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Building, Harrisburg.

PUERTO RICO: *Examination.* Santurce, March 7. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

RHODE ISLAND: * *Examination.* Providence, Jan. 5-6. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Building, Providence.

SOUTH CAROLINA: *Examination.* Columbia, June 26-29. *Reciprocity.* First Monday of each month. Sec., Dr. N. B. Heyward, 1329 Blanding Street, Columbia.

SOUTH DAKOTA: * Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

UTAH. *Examination.* Salt Lake City, June. Dir., Dr. Frank E. Lees, 324 State Capitol Building, Salt Lake City.

WASHINGTON: * Seattle, Jan. 23-25. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

WEST VIRGINIA: *Examination.* Charleston, Jan. 3-5. Sec., Medical Licensing Board, Dr. N. H. Dyer, State Capitol, Charleston.

WISCONSIN: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

WYOMING: Cheyenne, Feb. 6. Sec., Dr. Franklin D. Yoder, State Capitol, Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARKANSAS: *Examination.* Little Rock, May 9. Sec., Mr. L. E. Gebauer, 1002 Donaghey Building, Little Rock.

CONNECTICUT: *Examination.* New Haven, Feb. 11. Address: State Board of Healing Arts, 110 Whitney Avenue, New Haven 10.

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Building, Washington.

FLORIDA: *Examination.* June 3. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: Des Moines, Jan. 10. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids, Iowa.

MICHIGAN: *Examination.* Ann Arbor and Detroit, Jan. 13-14. Sec., Miss Eloise LeBeau, 101 N. Walnut Street, Lansing.

MINNESOTA: Minneapolis, Jan. 3-4. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, Jan. 10-11. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009, State Capitol Building, Lincoln 9.

RHODE ISLAND: *Examination.* Providence, Feb. 8-9. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Building, Providence.

OKLAHOMA: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

TENNESSEE: *Examination.* Memphis, Dec. 30-31. Sec., Dr. O. W. Hyman, 874 Union Avenue, Memphis 3.

TEXAS: *Examination.* Austin, Jan. 20-21 and April 21-22. Sec., Brother Raphael Wilson, 306 Nalle Building, Austin.

WASHINGTON. Seattle, Jan. 18-19. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

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American J. Obstetrics and Gynecology, St. Louis

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Use of Pentothal Sodium Anesthesia for Cesarean Sections. G. W. Gustafson and S. H. Gardiner.—p. 246.
Sterility Studies in Private Practice. E. L. King and J. S. Herring. —p. 258.
Results of Bilateral Ovarian Wedge Resection in 47 Cases of Sterility. Twenty-Year End Results: 75 Cases of Bilateral Polycystic Ovaries. I. F. Stein, M. R. Cohen and R. Elson.—p. 267.
Critical Analysis of Local Anesthesia as Agent for Relief of Pain in Vaginal Delivery. E. S. Taylor and W. W. Jack.—p. 275.
Pregnancy and Adnexal Cysts. R. L. Haas.—p. 283.
The Floating Fetal Head in the Primipara at Term. E. S. Auer and J. M. Simmons Jr.—p. 291.
Saphenous Phlebectomy for Varicose Veins During Pregnancy. F. W. Peyton and F. A. Loop.—p. 318.
Sweat Gland Tumors of Vulva. W. C. Danforth.—p. 326.
Evaluation of Prophylactic Penicillin Administration to Parturient Women. W. C. Keettel, J. W. Scott and E. D. Plass.—p. 335.
Correlated Study of Serum Protein, Erythrocyte Count, Leucocyte Count, Hemoglobin and Hematocrit in Normal Pregnancy. H. G. Hamilton and R. S. Higgins.—p. 345.
The Urinary Bladder During Labor. H. I. Kantor, J. E. Miller and J. C. Dunlap.—p. 354.
Evaluation of Cytologic Test in Early Diagnosis of Cancer: Two-Year Survey of Routine Use of the Smear Technique. J. Skapier.—p. 366.
Effect of Treatment with Antihistaminic Drug on Blood Pressure and Urine in Pregnant Women. D. B. Hoffman.—p. 385.
New Method of Dovetail Approximation of Ligaments in Vaginal Hysterectomy for Procidentia: Preliminary Report. H. Stuckert and J. R. Herron.—p. 392.
Fatty Acid Therapy of Pruritus Vulvae. A. M. Davids and A. Kurtin. —p. 397.

American Practitioner, Philadelphia

3:705-766 (Aug.) 1949. **Partial Index**

Salicylate Intoxication in Children: Report of 3 Cases. D. W. Burke. —p. 705.
The Rheumatic State with Case Report. J. A. Olson and V. W. Koch. —p. 708.
*Diagnosis of Syphilis Confused by Penicillin Therapy of Other Diseases. T. H. Sternberg and P. LeVan.—p. 720.
Simple Diagnostic Measures in Neuromuscular and Articular Pain, with Special Reference to Differential Palpation. O. Steinbrocker.—p. 723.
Scalenus Anticus Syndrome. R. H. Delafield.—p. 730.
Laboratory Aids in Evaluating Status of Liver. I. B. Brick.—p. 732.
Use of Vasodilators and Vasoconstrictors in Asthma. A. G. Cazort. —p. 737.
Study of Superficial Punctate Keratitis with Allergic Etiology: Report of 19 Patients. S. J. Taub, R. E. Miller, M. J. Fowler and R. G. Taub.—p. 739.
Respiratory Acidosis and Alkalosis in Infants with Acute Pulmonary Infections. S. Spectory and V. V. Startzman.—p. 744.

Diagnosis of Syphilis Confused by Penicillin.—Sternberg and LeVan present 5 case histories which illustrate the difficult diagnostic problems encountered in patients receiving penicillin for various reasons and who are subsequently found to have a positive serologic reaction for syphilis. All of these patients were hospitalized for illnesses other than syphilis. The blood for the serologic test was taken on admission. Penicillin treatment was started before the result of the serologic test was available. In no instance was there clinical evidence permitting a diagnosis of syphilis, and in only 1 patient was there a history of probable previous syphilitic infection. All the patients had infections known to be capable of producing a biologic false positive reaction. Differentiation of a biologic false positive from a true positive reaction is ordinarily accomplished by means of titered serologic tests performed at intervals of one to two weeks. In untreated syphilis the titer remains at a constant level or increase. In biologic false positive reactions, the titer usually decreases and in the majority of instances is not measurable within three months after the subsidence of the responsible infection. Since it has been demonstrated that even small amounts of penicillin may have a profound effect on the level of syphilitic reagin, in these patients serial titered serologic tests could not serve to clarify the diagnosis. In 2 of the 5 patients the history and positive Wassermann reactions of the spinal fluid offered corroborative evidence of syphilis. It is unlikely that the other 3 patients had syphilis. Because of the uncertainty, penicillin treatment for syphilis was completed and the patients were routinely followed. With the widespread use of penicillin, the diagnostic difficulties presented by these patients are encountered with increasing frequency. The recommendations made to minimize this occurrence include the immediate routine serologic tests and the temporary withholding of penicillin therapy except when urgently needed.

Annals of Surgery, Philadelphia

130:145-288 (Aug.) 1949

Mechanism of Post-Gastrectomy "Dumping" Syndrome. T. E. Machella. —p. 145.
Study of Mortality in a Burns Unit: Standards for Evaluation of Alternative Methods of Treatment. J. P. Bull and J. R. Squire. —p. 160.
Surgery of Patent Ductus Arteriosus. J. C. Jones.—p. 174.
Sigmoidovesical Fistulae Resulting from Diverticulitis of Sigmoid Colon. L. H. Mayfield and J. M. Waugh.—p. 186.
Intussusception in Infants and Children: Report of 143 Consecutive Cases. W. H. Snyder Jr., A. R. Kraus and L. Chaffin.—p. 200.
*Total Pancreatectomy for Hyperinsulinism Due to Islet-Cell Adenoma: Follow-Up Report Five and One-Half Years After Operation, Including Metabolic Studies. J. T. Priestley, M. W. Comfort and R. G. Sprague. —p. 211.
Varicose Veins: Further Findings Based on Anatomic and Surgical Dissections. R. S. Sherman.—p. 218.
Chronic Stenosis Regional Enteritis Surgical Pathology and Experience in Surgical Treatment. H. R. Hawthorne and A. S. Frobese.—p. 233.
*Further Experiences with Streptomycin Therapy in Peritonitis. E. J. Pulaski, A. B. Voorhees Jr. and S. F. Seeley.—p. 242.
Complete Duplication of Large Bowel Treated by Subtotal Colectomy. C. A. Allard, D. E. Ross and J. F. Hopkirk.—p. 249.
Primary Carcinoma of the Duodenum: Report of Case Surgically Resected. F. J. McGowan and W. I. Wolff.—p. 253.
Isolated Fracture of the Atlas: Report of Two Cases. D. J. Graubard and H. H. Ritter.—p. 261.
Unusual Experience with the Miller-Abbott Tube. R. M. Pool.—p. 267.
Spontaneous Internal Biliary Fistula: Review of Literature and Report of Two Cases. E. A. Noskin, A. A. Strauss and S. F. Strauss. —p. 270.
Emphysematous Acute Abdomen and Subcutaneous Emphysema from Intrarectal Operation. C. A. V. Burt.—p. 277.
Bilateral Broad Ligament Lipomata: Report of Case and Review of Literature. W. R. Lang and C. B. Bland.—p. 281.

Total Pancreatectomy for Hyperinsulinism.—Priestley and his associates review the clinical course and results of metabolic studies in a patient who had undergone total one-stage pancreatectomy five and one-half years previously for hyperinsulinism due to a small adenoma of the islets of Langerhans. Similar studies on this patient were reported in 1944 by Priestley, Comfort and Radcliffe sixteen months after the operation. The patient remained in good health during the five and one-half years after pancreatectomy. Her diabetes continued to be of relatively mild degree as compared with the type of diabetes which commonly occurs in children, adolescents and young adults. In spite of the loss of large amounts of nitrogen and fat in the feces, she was able to maintain an excellent nutritional state. The values for blood lipids and serum proteins remained within the normal range, and there was no abnormality of hepatic function, which was measured, in spite of the fact that her diet had not been supplemented with choline, lecithin or other lipotropic substance.

Streptomycin Therapy in Peritonitis.—Pulaski and his associates report a continuation of their studies of streptomycin in the treatment of fecal peritonitis. The 85 cases on which their studies are based include 54 of the cases analyzed in the earlier report. The data were derived from case histories submitted to the Office of the Surgeon General as part of a special study of streptomycin in various Army installations. The authors feel that statistical conclusions are not possible from the analysis of the 85 cases in which streptomycin was used alone or in combination with other drugs, but certain trends indicate: 1. In early spreading peritonitis in which the infecting

organism originates in the gastrointestinal tract, combined treatment with streptomycin and penicillin seems to offer no significant advantage over streptomycin alone. In the management of localizing lesions, on the other hand, combined therapy seems superior. 2. The optimal dosage of streptomycin, whether the drug is used alone or in combination, seems to be at least 2.5 Gm. daily. 3. After forty-eight hours it is usually possible to predict the success or failure of streptomycin therapy. 4. The optimum course of therapy is seven to ten days. Administration of streptomycin should be continued for forty-eight to seventy-two hours after the temperature returns to normal.

California Medicine, San Francisco

71:1-72 (July) 1949

What's New in Gastroenterology. C. M. Jones.—p. 1.
What's New in Orthopedics. K. Speed.—p. 6.
What's New in Aureomycin and Other Antibiotics. H. D. Brainerd. —p. 9.
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Changing Outlook in Coronary Disease. R. W. Langley.—p. 31.
Crossed Leg Palsy with Report of Recurrent Case. I. I. Weiss.—p. 33.
Primary Systemic Amyloidosis. M. J. Goldman and B. Gerstl.—p. 36.
Violent Reaction to Phenolphthalein. W. C. Alvarez.—p. 38.
Bone Tumors. D. King.—p. 39.

Endocrinology, Springfield, Ill.

45:1-112 (July) 1949. **Partial Index**

Determination of Adrenocortical Steroids in Human Urine. L. P. Romanoff, J. Plager and G. Pincus.—p. 10.
Effect of Administered Adrenal Cortical Hormones on Liver Glycogen of Normal and Scorbutic Guinea Pigs. R. W. McKee, T. S. Cobbey Jr. and Q. M. Geiman.—p. 21.
Effect of Thyroxine on the Female Reproductive System in Parabiotic Rats. E. D. Warner and R. K. Meyer.—p. 33.
Histological, Cytochemical and Physiological Observations on Regeneration of the Rat's Adrenal Gland Following Enucleation. R. O. Greep and H. W. Deane.—p. 42.
Changes in Serum Cholesterol and Cholesterol Esters in Alloxan Diabetic Rabbits. L. Swell, N. P. Goldstein and C. R. Treadwell.—p. 57.
Specificity of Intrauterine Test for Progesterone. C. W. Hooker and T. R. Forbes.—p. 71.
Effect of Varying Levels of Thyroidal Stimulation on Ascorbic Acid Content of Adrenal Cortex. D. P. Wallach and E. P. Reineke.—p. 75.
Comparative Oral Thyroxine-Like Activity of Natural and Synthetic Thyroproteins and of DL-Thyroxine Studied with the Goiter Prevention Method. E. Freiden, E. B. Tuckich and R. J. Winzler.—p. 82.
Occurrence and Determination of Conjugated Sulfates of Estrogens in Urine from Pregnant Women. H. Cohen and R. W. Bates.—p. 86.
Pituitary and Adreno-Cortical Relationships to Liver Regeneration and Nucleic Acids. A. Canzanelli, R. Guild and D. Rapport.—p. 91.
Serological Studies on Crystalline Adrenocorticotrophic Hormone: Production of Anti-Adrenocorticotrophin. J. H. Chase.—p. 96.

Journal of Applied Physiology, Washington, D. C.

2:1-48 (July) 1949

Fallacy of Per-Weight and Per-Surface Area Standards, and Their Relation to Spurious Correlation. J. M. Tanner.—p. 1.
*Action of Caffeine and Aminophylline as Respiratory Stimulants in Man. G. H. Richmond.—p. 16.
Pulmonary "Capillary" Pressure in Man. H. K. Hellems, F. W. Haynes and L. Dexter.—p. 24.
Electrokymographic Studies of Lung Field Pulsations with Exhalation Against Pressure. F. G. Gilliek and J. Schneider.—p. 30.
Alveolar Gasses in Rapid Decompression to High Altitudes. U. C. Luft, H. G. Clamann and H. F. Adler.—p. 37.

Respiratory Stimulants: Caffeine and Aminophylline.—Richmond undertook studies to determine whether caffeine and aminophylline alter the sensitivity of the respiratory center to carbon dioxide. The effect of subcutaneouly administered caffeine (0.25 Gm.) and sodium benzoate on ventilation minute volumes and cardiac and respiratory rates was observed in 6 subjects while they were breathing atmospheric air and 3 or 5 per cent carbon dioxide in oxygen. This same effect was observed in 5 subjects after the subcutaneous administration of 0.25 Gm. of aminophylline. Caffeine and aminophylline had a variable effect on ventilation minute volume with a slight average increase when the subject was breathing atmospheric air. The ventilation minute volume was increased in every case after administration of caffeine when the subject was breathing either 3 or 5 per cent carbon dioxide in oxygen. After the administration of aminophylline the effect was inconsistent and the average effect was not significant. The cardiac rate showed no consistent response to carbon dioxide. Both caffeine and aminophylline caused slowing of the cardiac rate. Neither carbon dioxide nor caffeine, nor the combination, caused any significant change in the electrocardiogram. It is concluded that caffeine acts on the respiratory center by increasing its sensitivity to carbon dioxide. The mechanism of the action of aminophylline in the dose used in this study does not appear to be similar to that of caffeine.

Journal of Immunology, Baltimore

62:135-256 (June) 1949

Further Studies of Immunological Properties of Polysaccharides from Serratia Marcescens (Bacillus Prodigiosus). II. Nature of Antigenic Action and Antibody Response in Mice. D. R. A. Wharton and H. J. Creech.—p. 135.
Influence of Mode of Immunization on Relationship Between Development of Tissue Titers and Release of Hemolysins in Vitro. S. Roberts, E. Adams and A. White.—p. 155.
Immunochemistry of Allergens. IX. Relationship of Carbohydrate to Antigenic Properties of Allergenic Protein from Cottonseed. E. J. Coulson, J. R. Spies and H. Stevens.—p. 171.
Prophylactic Use of Schistosomal Antigen. N. P. Watts.—p. 183.
Use of Phenolized Allantoic Fluid Antigen in Complement Fixation Test for Psittacosis. D. J. Davis.—p. 193.
Some Quantitative Aspects of Immune Hemolysis. M. C. Morris. —p. 201.
Rift Valley Fever; Accidental Infections Among Laboratory Workers. K. C. Smithburn, A. F. Mahaffy, A. J. Haddow and others.—p. 213.
Quantitative Studies on Induction of Active Immunity to Smooth, V Form Salmonella Typhosa; Comparison of Antigenicity of Heat-Killed and Formalin-Killed Bacterial Suspensions. J. K. Spitznagel and R. Y. Trainer.—p. 229.
Use of Adjuvants in Production of Rh Antisera in Animals. H. S. Shatin and W. C. Boyd.—p. 237.
Effect of Various Dyes in Vitro and In Vivo upon Influenza Virus Infection in Mice. M. S. Fleisher.—p. 245.

Northwest Medicine, Seattle

48:517-588 (Aug.) 1949

Cause of Cracking Joints; Relation to Weather and Fibrositis. E. E. Brown.—p. 537.
*Intragastric Oxycel. R. R. De Nicola.—p. 541.
Psychiatric Hospital as Therapeutic Unit. E. D. Hoedemaker and J. T. Thickstun.—p. 543.
Rorschach's Test as Used in Psychiatric Interview. G. Ulett.—p. 544.
Modern Syphilotherapy. L. A. Dewey.—p. 548.
Rheumatic Fever in Kootenai County, Idaho. H. J. Dodge.—p. 550.
Use of Fibrin Foam in Bronchial Stump Closure. M. F. Kepl and R. E. Ahlquist.—p. 553.

Intragastric Oxycel.—De Nicola reports a 30 year old man who was hospitalized for recurrent bleeding from a chronic duodenal ulcer. A Hoffmeister subtotal gastric resection was performed. Three hours later the patient vomited clotted blood around the Levin tube. Aspiration with the Levin tube secured 300 cc. of clear venous blood. Whenever aspiration was not performed from fifteen or twenty minutes, hematemesis occurred. During the next several hours 1,000 cc. of whole blood was given, but there was no relief of bleeding and exploratory operation was performed. There was no bleeding from the anastamosis. There was active bleeding in the gastric pouch high toward the diaphragm. Warm saline packs were placed in the stomach pouch to control the bleeding but without success. The Levin tube, already in the stomach, was pulled out through the open anastomosis and packed for about 4 inches (10 cm.) with five separate pieces of oxycel. This was then pulled up into the stomach remnant with the hope that the oxycel would exert its hemostatic action. A crude in vitro experiment was set up to gage the status of the intragastric oxycel. A comparable amount of oxycel was placed in an open jar mixed with 200 cc. of the patient's gastric aspirations. Daily inspection gave some idea of what was happening to the material in vivo. On the night of the fourth postoperative day, when the patient was making an uneventful recovery, the oxycel in the bottle was in shreds. The Levin tube was removed and came out clean of oxycel. Much of the material was passed in tarry bowel movements in the following seven days. The patient was discharged on the fifteenth postoperative day. The author suggests that acidity may inactivate the hemostatic action of oxycel and, although the material effected clotting following gastrectomy (an operation eliminating free hydrochloric acid), acidity

of the complete stomach might yet destroy this action. Fibrin foam or gelatin sponge might be used instead in severe debilitated patients, who have serious protracted esophageal or gastroduodenal bleeding and are unable to withstand operation.* The question of the difficulty in passing a clothed Levin tube, moistened with thrombin, or in feeding the material might well be offset by the gravity of such emergencies.

Review of Gastroenterology, New York

16:617-670 (Aug.) 1949

Histopathology of Semisquamous Epithelial Layer in the Gallbladder. F. Duran-Jorda.—p. 617.
Regional Enteritis in the Negro. J. A. Marks and S. A. Fink.—p. 623.
Gallbladder Disease in the Aged. E. W. Lipschutz.—p. 629.
Traumatic Diaphragmatic Hernia with Gastric Obstruction and Jaundice. J. Tesler, M. Scimeca and W. Goldstone.—p. 635.
Use of Ultraviolet Blood Irradiation in Typhoid Fever. E. W. Rebbeck and H. T. Lewis Jr.—p. 640.
Simple Benzidine Test for Occult Blood in Feces. M. B. Levin and J. Y. C. Watt.—p. 650.

Southern Medical Journal, Birmingham, Ala.

42:545-634 (July) 1949

*Internal Fixation of Femur with the Kuntscher Intramedullary Nail. S. B. Fowler and D. C. Riordan.—p. 545.
Treatment of Slipped Femoral Epiphysis. H. B. Boyd, A. J. Ingram and H. O. Bourkard.—p. 551.
Pyogenic Osteomyelitis of Cervical Spine with Quadriplegia Secondary to Cord Pressure: Recovery Following Spinal Cord Fusion. R. D. Butterworth and E. B. Carpenter.—p. 561.
Electrocardiographic Aids in Diagnosis of Coronary Artery Disease. S. Scherlis.—p. 565.
Pityriasis Rosea-Like Drug Eruptions Due to Bismuth. W. L. Dobes and H. S. Alden.—p. 572.
*Nail Bed Reactions Due to "Undercoats." E. S. Bereston.—p. 579.
Anesthesia in Proctology. H. C. Slocum and C. R. Allen.—p. 582.
How May Proctologist Best Serve His Patients and Profession? W. T. Brockman.—p. 588.
Recent Developments in Field of Education in Industrial Medicine. E. W. Brown.—p. 591.
Cardiac Arrest Under Anesthesia. J. T. Stage.—p. 597.
Problems of Rehabilitation Following Injuries to Foot and Ankle. C. V. Hatchette.—p. 604.
Active Therapy of Varicose Veins in Pregnancy. H. G. Hamilton, R. F. Pittam and R. S. Higgins.—p. 608.
Management of Allergic Sinusitis. C. H. Glover.—p. 613.
Management of Concomitant Convergent Strabismus. F. D. Costenbader.—p. 617.
Keratosis Blennorrhagica: Report of Case Treated with Penicillin and Hyperpyrexia. C. D. Shields and E. M. Smith.—p. 623.

The Kuntscher Intramedullary Nail in Fractures of Femur.—Fowler and Riordan show that in certain fractures of the femur fixation with Kuntscher's intramedullary nail obtains results not possible with any other technic. The economic advantage to patients who need be hospitalized only a few days, and who are quickly able to return to a gainful occupation with a normal limb, is in contrast to the state of the usual patient, who is hospitalized in traction from six to eight weeks and who then wears a spica cast for an additional six to eight weeks and, after all that, begins his struggle with a weak limb and a stiff knee. This report concerns the use of the Kuntscher intramedullary nail in 26 cases of fractures of the shaft of the femur. They included 10 fresh fractures, 2 cases of leg shortening, 1 of osteotomy, 7 of delayed fixation and 6 of nonunion or malunion. The authors state that the Kuntscher intramedullary nail is useful in less than 10 per cent of fresh fractures of the femur but not in long spiral fractures or comminuted fractures. The large butterfly type of fragment also contraindicates the intramedullary nail. The fracture site must lie within the upper two thirds of the shaft of the femur and at least 1 inch (2.54 cm.) below the lesser trochanter. The principal field of usefuless of the intramedullary nail is in the following types of cases: femoral shortening, malunited fractures, ununited fractures, fractures which do not reduce satisfactorily with traction and which should be operated on, double fractures of the shaft of the femur and fractures which pose special problems in immobilization, or in which early mobilization is essential. Used indiscriminately this treatment is hazardous, but with proper appreciation of its limitations and virtues results obtained with it cannot be duplicated by any other technic.

Nail Bed Reactions Due to "Undercoats."—Bereston presents the history of a woman aged 25, who had noticed that the distal portions of her finger nails were discolored yellow and gray, thickened, and elevated from the nail bed. There were bleeding points in the nail and under the nail edge from time to time. Numbness, redness and pain were present in the finger tips. She had been examined by several internists, one of whom thought she had Reynaud's disease. She stated she had used a commercially distributed undercoat on her finger nails every few weeks for four months prior to noticing the nail changes, and she was still using it. Results of patch tests with her nail polish were negative, but her skin gave strongly positive reactions to the undercoat. When last seen two months later, the changes in the nails were beginning to disappear. The patient was reassured and advised to discontinue use of the undercoat and all similar preparations for the nails. The author cites other reports on nail changes produced by the rubbers and formaldehyde resins contained in certain nail polish undercoats.

Surgery, Gynecology and Obstetrics, Chicago

89:1-128 (July) 1949

*Relief of Pain in Chronic (Calcareous) Pancreatitis by Sympathectomy. B. S. Ray and A. D. Console.—p. 1.
*Blood and "Available Fluid" (Thiocyanate) Volume Studies in Surgical Patients: Part I. Normal Patterns of Response of Blood Volume, Available Fluid, Protein, Chloride and Hematocrit in Postoperative Surgical Patient. R. P. Lyon, J. R. Stanton, E. D. Freis and R. H. Smithwick.—p. 9.
Clinical Studies of Heparin Cofactor. W. D. Holden, J. W. Cole and J. H. Davis Jr.—p. 20.
*Cytologic Diagnosis of Cancer of Descending Colon and Rectum. C. L. Wisseman Jr., H. M. Lemon and K. B. Lawrence.—p. 24.
Abdominoperineal Removal of Low Lying Cancer of Rectum: Five Year Cures and Local Recurrences. V. C. David and R. K. Gilchrist.—p. 31.
Diagnosis and Repair of Pseudarthrosis of Spine. E. L. Ralston and W. A. L. Thompson.—p. 37.
Aureomycin Treatment of Urinary Tract Infections. H. S. Collins and M. Finland.—p. 43.
Study on Relief of Obstruction in Common Bile Duct and Papilla of Vater. M. W. Eisenstein.—p. 49.
Intrathoracic Goiter Located in Posterior Mediastinum. R. H. Sweet.—p. 57.
Outlet Pelvimetry: Results in Measuring Symphysis-Biparietal and Sacral-Biparietal Diameters in 145 Primiparous Women. H. Thoms and C. B. Cheney.—p. 67.
Biologic Chemistry of Wound Healing: II. Effect of dl-Methionine on Healing of Surface Wounds. S. A. Localio, L. Gillette and J. W. Hinton.—p. 69.
Physiologic Effects of Curare: Its Failure to Pass Placental Membrane or Inhibit Uterine Contractions. P. Harroun and C. W. Fisher.—p. 73.
Observations on Macrocytic Anemia Associated with Pregnancy. T. D. Spies.—p. 76.
Primary Splenic Panhematopenia. R. W. Heinle and W. D. Holden.—p. 79.

Sympathectomy for Relief of Pain in Chronic Pancreatitis.—Ray and Console point out that the pain which accompanies chronic calcareous pancreatitis is chiefly in the midline of the upper abdomen but may be referred to either or both upper abdominal quadrants and to the back. It is recurring or constant, often becoming intolerable, and in such cases it constitutes the dominant problem in treatment. Total or near total pancreatectomy has been employed, but the operation is formidable, even impossible in some cases. Since relief of pain is the primary purpose of surgical treatment, the interruption of pain pathways from the pancreas is considered as an alternate. The authors review various procedures for interruption of the pain pathways from the pancreas and describe their own experience in 5 cases (4 of chronic calcareous pancreatitis and 1 of pancreatic carcinoma). They conclude that pain from the pancreas is mediated by visceral afferent nerves that traverse the celiac plexus, the splanchnics, and the sympathetic chains on both sides. The minimal operation thus far found to provide total analgesia of the pancreas and the one proposed as most suitable is bilateral resection of the ganglionated chains from the eleventh thoracic to the first lumbar vertebrae and of the lowest 8 cm. of the greater splanchnic nerves. Unilateral sympathectomy, right or left, may in some patients provide interruption of enough of the sensory supply to afford relief of pain. While the operation is well suited to the relief of intractable pain of chronic pancreatitis, it is of limited value in carcinoma of the pancreas chiefly because of the tendency of the disease to spread outside the organ.

Blood and "Available Fluid" in Surgical Patients.—The studies by Lyon and associates represent further efforts to establish the patterns of response of the blood and available fluid volumes in the postoperative patient and to suggest correlations that may exist between such total volume changes and the usual concentration measurements. Twenty patients from the surgical services of the Massachusetts Memorial Hospitals were subjected to a variety of major general surgical procedures. All patients were considered to be in normal nutritional and fluid balance prior to operation and, except where specifically noted, received 2,000 to 3,000 cc. of 5 per cent dextrose in water on the operative day, followed by oral fluids and house diet as tolerated on succeeding days. Blood loss occurring during operation was measured. Replacement of operative blood loss was withheld in 10 patients. Detailed observations were made in the preoperative and ten day postoperative period. Definite patterns of response were noted postoperatively in the blood, "available fluid," plasma and red cell volumes as well as in the plasma protein concentration, hematocrit and total circulating protein. The influence of the state of hydration and amount of blood loss on the patterns of response of these volumetric compartments and concentration measurements is described, and the significant interrelationships are discussed. The authors arrive at the following conclusions: 1. After blood loss, the mechanism for the preservation or restoration of the total blood volume appears dependent on a state of positive fluid balance. 2. With patients in negative fluid balance following operation, recovery of the "available fluid," plasma and total blood volumes is delayed until a positive fluid balance is established. 3. In the absence of excessive extrarenal water and salt loss, a daily ration of 2 to 3 liters of 5 per cent dextrose in water was adequate to establish positive fluid balance and to insure plasma volume recovery. 4. When depleted through either operative or postoperative blood loss, the red cell volume shows little tendency to recover spontaneously within the first ten days following operation. 5. In the adequately hydrated patient, serial determinations of the basal hematocrit offer the most useful index of uncompensated blood loss. 6. Postoperative decreases in the plasma protein concentration of from 0.2 to 1 Gm. per hundred cubic centimeters are not necessarily indicative of either inadequate nutrition or a depleted total amount of circulating protein.

Cytologic Diagnosis of Cancer of Descending Colon and Rectum.—Patients selected for cytologic studies by Wisseman and associates included those suspected of having carcinoma and those with diverse gastrointestinal complaints and diagnostic problems. All patients were subjected to at least one sigmoidoscopy; most, to barium enemas, and others, to biopsy. In the majority of suspected cases exploration and resection or biopsy were performed for pathologic confirmation of the diagnosis. Whenever possible, an attempt was made to establish the diagnosis by older conventional methods in addition to the smear technic. A total of 110 cases were studied, in 39 of which carcinoma was the final diagnosis. Three fourths of the tumors of the rectum and sigmoid were either correctly diagnosed or suspected on the basis of the smears, but all the tumors of the ascending and transverse portions of the colon were missed. In 110 cases there was one false positive diagnosis, and three quarters of all cases were diagnosed correctly. Thus the range of usefulness was found to be limited to the rectum, sigmoid colon and lower portion of the descending colon, where two thirds to three fourths of the tumors were detected or suspected on the basis of the smears. In this region the smear method compared favorably with roentgen examination and sigmoidoscopy with biopsy. It was possible to detect malignant cells from tumors which could not be seen through the sigmoidoscope. The use of smears in the study of conditions other than malignant is suggested.

West Virginia Medical Journal, Charleston

45:159-198 (July) 1949

Refraction Grievances: Their Cause and Cure. M. W. McGehee.—p. 159.
Treatment of Strabismus. O. B. Nugent.—p. 165.
Recent Advances in Surgical Treatment of Colon and Rectal Disease. G. W. Ault.—p. 169.
Pregnancy and Labor Complicated by Heart Disease. W. K. Yates.—p. 173.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Glasgow Medical Journal

30:235-270 (July) 1949

Respiratory Disease: Industrial Hazard. A. T. Doig.—p. 235.
Psoriasis Vulgaris: Report on Case Showing Skin, Joint and Eye Lesions (Keratitis Psoriatica). S. Horowitz.—p. 251.

Lancet, London

2:181-224 (July 30) 1949

*Prevention of Burns and Scalds: Review of 1,000 Cases. L. Colebrook and V. Colebrook.—p. 181.
Excision-Suture Technic in Infections of Hand. G. P. Arden, A. P. Kitchin and H. D. W. Powell.—p. 188.
*Recent Applications of Nisin. A. Hirsch and A. T. R. Mattick.—p. 190.
Intramedullary Abscess of Spinal Cord. J. Foley.—p. 193.
Fulminating Apyrexial Postpartum Streptococcal Peritonitis. L. N. Jackson and M. H. Jackson.—p. 195.
*Ankylosing Spondylitis in all Three Children of One Family. W. Tegner and K. Lloyd.—p. 196.
Mercaptan in Breath of Patients with Severe Liver Disease. L. S. P. Davidson.—p. 197.
Inheritance of Nodular Goiter: Report of Family. W. P. U. Jackson.—p. 198.

Prevention of Burns and Scalds.—Of the 1,000 cases of burns and scalds reviewed by the Colebrooks, 70 per cent occurred in and around the home and only 30 per cent were industrial accidents. The mortality rate was much greater in the home accidents (6.3 per cent) than in the industrial accidents (1.3 per cent). The majority of the home accidents involved children, 53 per cent under 5 years and 70 per cent under 15 years. There are considerable risks from fire and hot water in the English home, the open coal fire still being the outstanding hazard. The risks from burns and scalds are greatest for young children, before they have developed "heat sense." Special risks are associated with the clothing of girls and women. Burns and scalds—apart from their cost to the persons concerned—make heavy demands on hospital services. It is estimated that in England and Wales alone each year injuries of this kind must require at least 1,000,000 hospital bed-days. The authors feel that the following preventive measures are essential: (1) improvement in the design of guards for open fires and proper provision made for fixing them in all new houses being built, (2) regulations requiring that all electric and gas fires offered for sale must conform to certain safety standards, which would include adequate guarding, and (3) nationwide propaganda by radio, the press, the cinema, demonstrations, exhibitions and talks in schools and community centers. Flannelette gowns worn by children and women should be treated to render them noninflammable.

Applications of Nisin.—According to Hirsch and Mattick the antibiotic produced by Streptococcus lactis and designated as nisin is mainly effective against gram-positive organisms, including the tubercle bacillus. Its value resides in its bactericidal nature. Single injections are remarkably effective against certain streptococcic and clostridial infections in mice. It also appears to be effective in experimental tuberculosis. Recently this antibiotic was used in a field trial against bovine streptococcic and staphylococcic mastitis. In the experiments described herein nisin crystals in fiftieth-normal hydrochloride solutions were used in tests in vitro; for injections these solutions were brought to a p_H of 4. The authors describe tests on the bactericidal power and on the toxicity and discuss the effects on the blood and on mycobacteria. Nisin is bactericidal in vitro and in vivo. It seems to have no effect on blood, but its toxicity depends on the route of injection. Severe local reactions result from repeated subcutaneous injections. With intravenous and intramuscular administration there is rapid absorption with little or no local reaction, and the approximate LD_{50} is 30 mg. per kilogram of body weight with intravenous injection and 200 mg. per kilogram with intramuscular injection. The H37RV strains of Mycobacterium tuberculosis, which are resistant to nisin, are susceptible to streptomycin and vice versa. More than additive effect against H37RV is obtained when nisin is used with streptomycin and licheniformin or with licheniformin and

sulfathiazole. Given subcutaneously nisin limited the spread of experimental tuberculosis. Given intravenously it almost completely suppressed its development.

Ankylosing Spondylitis.—Tegner and Lloyd report 2 brothers and their sister with ankylosing spondylitis. Increased urinary excretion of 17-ketosteroids has been reported in ankylosing spondylitis. Hench and his co-workers have described the use of 17-hydroxy-11-dehydrocorticosterone (cortisone) in rheumatoid arthritis. One of their 14 patients had "rheumatoid spondylitis," a synonym for ankylosing spondylitis. All their patients had low ketosteroid excretions, and the excretion level was further reduced by the use of the compound which had proved so successful in the treatment of rheumatoid arthritis. The authors feel that the relations of ankylosing spondylitis and rheumatoid arthritis and their reaction to cortisone need further investigation in the light of this new work. The apparent relation of ankylosing spondylitis to 17-ketosteroid metabolism may have a bearing on familial incidence. The authors consider it worth noting that the ankylosing spondylitis in the brother of their original patient would have gone unrecognized if he had not been summoned for examination.

Acta Chirurgica Scandinavica, Stockholm

98:93-220 (July 4) 1949. **Partial Index**

Combined Pre-Operative Thiouracil and Lugol Treatment in Thyrotoxicosis. S. Borgström.—p. 93.
Postoperative Emptying Difficulties Following Gastric Resections. S. Rödén.—p. 99.
Surgical Treatment of Patent Ductus Arteriosus. K. Liavaag.—p. 109.
Experiences Concerning Use of Tetra-Ethyl-Ammonium in Diagnosis and Treatment of Peripheral Vascular Diseases. P. Windfeld.—p. 118.
Course of Healing of Subcutaneous Renal Rupture and So-Called Traumatic Nephritis. P.-H. Ekdahl and Y. Olsson.—p. 142.
Bronchiogenic Carcinoma. K. Liavaag.—p. 182.
*Recurrence Rate of Hernia in Connection with Brief Confinement to Bed Following Hernioplasty. A. Wenckert.—p. 205.
*Acute Painful Torticollis and Cervical Subluxation. M. Sulamaa.—p. 212.

Recurrence Rate in Hernioplasty.—The material reviewed by Wenckert comprises all the cases of indirect, nonincarcerated inguinal hernia in male subjects 15 years and older, operated on during the years 1943 through 1945 at a military hospital, as well as a comparative series from the same hospital from 1937 through 1942. Civilians as well as military personnel are treated at the hospital. Prior to 1942, two weeks in bed after hernioplasty was the rule at the military hospital. That year the system of a short stay in bed was introduced and began to be applied in all laparotomies. The stay in bed was shortened for hernioplasty patients too, so that by the end of 1942 the average postoperative period in bed in these cases was slightly over seven days. The corresponding figure for the 1937 to 1942 period was 11.1 plus or minus 3.5 days. The stay in bed continued to be shortened in 1943, and the average for the period 1943 to 1945 was 3.0 plus or minus 0.8 days. The rate of recurrence did not differ with shorter or longer postoperative bedrest.

Acute Painful Torticollis and Cervical Subluxation.—Sulamaa reports 2 girls with painful torticollis. The first child, aged 6, had a painful torticollis when she awoke one morning. When she was brought for treatment two months later, roentgenograms indicated subluxation between the second and third cervical vertebrae. The pain ceased immediately and the neck could be freely moved when the head was hung in hyperextension. The plaster collar which had been applied was removed after one month, and the girl appeared to be cured. Three days later, however, the condition suddenly recurred and disappeared again when the head was placed in a position of hyperextension. Recovery was final after treatment with a plaster collar for three months. In the second case painful torticollis occurred after otitis of long duration. Roentgen examination performed with anesthesia showed subluxation between the second and third cervical vertebrae when the head was flexed. Dislocation could not be established in hyperextension. As in the first case, the pain ceased and the contraction loosened when the head was hung in a position of hyperextension. Recovery followed treatment with a plaster collar for two and a half months. The author assumes that in the first patient an unnoticed trauma was probably the cause of the acute torticollis. In the second case there was probably an infectious cause.

Bruxelles-Médical, Brussels

29:1649-1698 (July 31) 1949

Case of Still's Disease Complicated by Edemas. C. Pellet.—p. 1659.
*Physiopathologic Study of Infiltration of Superior Cervical Ganglion. A. Fanard, J. Limage and P. Paquet.—p. 1662.

Infiltration of Superior Cervical Ganglion.—Fanard and co-workers performed bilateral infiltration of the superior cervical ganglion with a 1 per cent solution of procaine hydrochloride in 40 women with amenorrhea refractory to other therapy. A systematic study of the effect of the infiltration of the superior cervical ganglion on menstrual cycle, glycemia, diuresis, elimination of chlorides, weight, behavior and mental state was made in 18 of these patients. Menstruation occurred within twenty-four hours to eight days after the infiltration and recurred regularly in patients in whom the origin of the amenorrhea could be attributed to the hypophysis. Vaginal smears showed a diminution in acidophils in cases in which cells of this type were observed before the infiltration, while there was no change in basophils. The patients who were apathetic and adynamic before the treatment became alert and dynamic. There was no increase in glycemia after the infiltration. In cases in which an increase occurred, it did not exceed 10 per cent of the initial value. Spontaneous changes of this order may likewise be observed in the absence of infiltration. The urinary chlorides were increased immediately after the infiltration in normal women. In 1 woman of the diencephalohypophyseal, or "water and salt," obesity type, the urinary chlorides were increased immediately after the infiltration; in a second patient they increased within several days. The diuresis was considerably increased in both patients, persisting for a month in the first patient with a loss of 15 Kg. (33 pounds) of body weight. In the first obese patient, who was placed on a diet poor in water and salt and who, several days later was given an intravenous infusion of isotonic sodium chloride solution, the fractionated elimination of water and chlorides was studied until the two elements were constant. Infiltration of the superior cervical ganglion was performed at this time. There was diminished diuresis and a slight increase in chlorides within one hour. The diuresis remained low for five days and was then increased to about 2 liters per day. The chlorides were increased and the diuresis was diminished considerably in a normal woman on the same diet who had received isotonic sodium chloride infusion but had been given an injection of 6 units of posterior hypophyseal extract instead of the infiltration of the superior cervical ganglion. Procaine hydrochloride infiltration of the superior cervical ganglion is suggested as treatment for neurohypophyseal amenorrhea and diencephalohypophyseal obesity.

Medisch Maandblad, Batavia

2:161-192 (June) 1949. **Partial Index**

Blood Pressure and Pulse Frequency of White Race in the Tropics. F. Vriesendorp, P. Hofman and J. Pel.—p. 166.
*Problem of Genesis of Peptic Ulcer. T. Botman.—p. 172.

Genesis of Peptic Ulcer.—Botman is of the opinion that infection, hemorrhage and vascular and neurogenic factors all play a part in the pathogenesis of peptic ulcer. Discussing the morphologic aspects of gastroduodenal ulcers, he mentions among others their typical localization, their rapid development, the fibrinoid necrosis in and the strong reactive formation of connective tissue around the ulcer, the development of new necrotic niches in the midst of reactive connective tissue, the cone and terrace shaped ulcer base and the monaxial symmetry of single as well as of multiple ulcers. He emphasized the monaxial symmetry and mentions certain functional characteristics, such as racial predisposition and familial occurrence, development following burns, trauma and infection, and its character as a secondary disease. In experiments on guinea pigs the author observed that these animals react with hemorrhagic necrosis to local sensitization followed by introduction of the same toxic substance into the blood stream. In his opinion ulcers are essentially allergic hemorrhagic necroses in the form of a focal tissue reaction as in the Schwartzmann phenomenon.

Medizinische Klinik, Munich

44:913-944 (July 22) 1949. **Partial Index**

*Lipocalcinogranulomatosis, a New Lipidosis. E. Andreas.—p. 913.
Bronchial Cancer. A. Moll.—p. 916.
New Form of Osteotomy for Genu Varum (Out-Knee). W. Dachsel. —p. 920.
Suggested Psychosis in a Married Couple (Folie à Deux) Practicing Spiritualism. W. P. Schmitz.—p. 926.
Acute Alcoholic Intoxication: Pathogenesis, Prevention and Therapy. K. Linck.—p. 931.
Clinical Studies on a Phenylurea Derivative of Insulin. E. Kestermann and H. Thöne.—p. 934.

Lipocalcinogranulomatosis, a New Lipidosis.—Andreas states that Teutschländer in 1935 first described an entity which he designated as lipogranulomatosis. He discovered the entity in examining "tumor tissue" from a child whom he observed for five years. At the age of 2½ years tumors began to develop, first on the scapula and later on the elbows. They developed symmetrically on the right and left sides. The swellings were painless and of moderate firmness and gradually increased in size. Microscopic examination of removed tumors revealed that they consisted of firm connective tissue enclosing cavities, which in turn contained necrotic material and fluid permeated with calcium salts surrounded by granulation tissue containing giant cells. Lipid substances were present in large quantities. Teutschländer and others suggested that the calcium metabolism must be disturbed in this type of granulomatous process. The author observed a boy, aged 10, who had tumors on both elbows, which were removed and examined histologically and chemically. The lesions were identified as a cholesterinic lipidosis. The author reviews the characteristics of other types of lipidoses, such as Gaucher's disease, Niemann-Pick disease, xanthoma tuberosum and Hand-Schüller-Christian's disease. He stresses that the lipocalcinogranulomatosis is a true cholesterinic lipidosis. It is characterized by painless, symmetric tumors. Microscopic examination reveals deposits of cholesterol and calcium, decomposition of the tissue and formation of granulations. The process is located in the bursae mucosae and in the musculature. This entity is a true cholesterinic storage disease and is not to be confused with myositis ossificans progressiva.

Practica Oto-Rhino-Laryngologica, Basel

11:246-304 (Nr. 4) 1949. **Partial Index**

*Vomiting After Tonsillectomy. L. Koleszár.—p. 277.
*Empyema of Nasal Sinuses as Occupational Disease Resulting from Inhalation of Dusts. W. Schmidt.—p. 282.

Vomiting After Tonsillectomy.—Koleszár reviews observations on 200 patients in a hospital for displaced persons, for whom he performed tonsillectomies. Fifteen of these experienced postoperative vomiting. He presents evidence that these attacks of vomiting are the result of acidosis and that they can be arrested by intravenous injection of 10 cc. of a 10 per cent solution of dextrose with 20 units of insulin.

Empyema of Sinuses, an Occupational Disease.—Schmidt states that in the course of animal experiments carried out over a period of years attention was given to the effect of industrial dusts on the mucous membranes of the nose and of the nasal sinuses. It was found that exposure of rabbits to industrial dusts frequently resulted in empyema of the nasal sinuses. In its effects on the mucous lining this empyema does not differ from the manifestations of empyema of the nasal sinuses in human beings. Consequently, when one is dealing with workmen in industries involving exposure to dust—special attention should be given to the nasal sinuses in addition to the main cavities of the nose.

Sangre, Santiago

1:5-90 (Jan.-April) 1949. **Partial Index**

*Cytodiagnosis of Cancer. R. Etcheverry B., A. Nijamkin F., C. Guzman L. and J. Ashbun Z.—p. 23.

Cytodiagnosis of Cancer.—Etcheverry and collaborators performed Papanicolaou's cytodiagnosis in 650 cases. The results were positive and definitely proved in 222 of 250 cases of cancer. The authors conclude that cytodiagnosis with 80 to 88 per cent positive results for cancer is of great clinical value. It is easy to perform and gives rapid results when the May-Grunwald Giemsa stain is used. It is indicated when a biopsy cannot be performed, as in cancer of the serous membranes, the bone marrow, the stomach, the lung and the urinary tract. It is also of value in controlling the course of the disease after an operation. Positive diagnostic results are of value, whereas doubtful results indicate the advisability of repeating the procedure for verification. Signs of value, in order of importance, for identification of cancer cells are: the presence of large nucleoli, the formation of minute cellular bunches, the presence of atypical nuclei, the increased size of the cells and the presence of atypical mitosis and also of monstrous cells. The method is indicated mainly for early diagnosis of cancer, especially of prostatic cancer. Such examination should be routinely done for persons who, because of age and antecedents, may be subject to prostatic cancer.

Semaine des Hôpitaux de Paris

25:2309-2338 (July 22) 1949

*Interpretation, Evaluation and Indications of Angiocardiography in Congenital Disorders. E. Donzelot, A. M. Emam-Zadé, R. Heim de Balsac and others.—p. 2309.
Roentgenologic Examination of Bronchial Tree, Using Lipiodol (Iodized Oil) as Opaque Medium in Thin Layer Impregnation: Technical Study. P. Delie and F. Finet.—p. 2318.
Roentgenologic Study of Esophageal Cancer Following Surgery. M. Antoine and M. Massol.—p. 2324.
Bone Manifestations of Besnier-Boeck-Schaumann Disease (Perthes-Jüngling's Disease). F. Robert.—p. 2327.
*Roentgen Therapy for Parkinson's Disease. J. P. May and R. Adam. —p. 2330.

Angiocardiography in Congenital Disorders.—According to Donzelot and co-workers, the occurrence of intraventricular or intravascular communications modifies most frequently the circulatory conditions in patients with congenital cardiopathy. The contrast medium may appear unexpectedly in an unusual area and reveal an abnormal passage, a congenital anomaly. The observation that the right chamber propels its blood simultaneously into the pulmonary artery and the aorta is a demonstration of an intraventricular communication combined with a dextroposition of the orifice of the aorta. Angiocardiography was performed on 74 patients. The roentgenologic delineation showed a definite correspondence between the postmortem and in vivo appearances. Angiocardiography was of definite aid in establishing the diagnosis in complicated cases of congenital anomalies. It proved indispensable in the decision as to whether or not surgical treatment was indicated and in selection of the proper operative procedure. Angiocardiography is indispensable in differentiation of mediastinal tumors from vascular tumors. Cardiography should not be performed in cardiac decompensation or in arterial disorders. General condition and renal function must be satisfactory when cardiography is to be performed.

Roentgen Therapy in Parkinson's Disease.—May and Adam treated 12 patients with Parkinson's disease, 6 men and 6 women between the ages of 29 and 65, with roentgen rays, using Tardieu and Guillaumont's technic. The gray central nuclei were irradiated through three fields, one anterior, frontal and median, and two lateral temporal fields centered 2 cm. above the sella turcica, using 200 kv. with 0.5 mm. copper and 2 mm. aluminum filter and a 40 to 60 cm. distance. Treatment should be started with 50 r twice a week, and the dose may be increased to 100 r and 150 r twice a week up to a total dose of 2,400 to 3,000 r, 1,000 r to each field. Two patients had postencephalitic parkinsonism; 4 had senile parkinsonism; in 3 the disease was of traumatic origin, and in 3 the cause was unknown. Tremor disappeared or was improved in 6 patients; it persisted in 3 and was attenuated in 3. The automatic movements were not much influenced. The fixed expression of the face and the rigidity of the muscles of mastication were improved. Salivation was restored to near normal. Improvement persisted in several patients and the downward course seemed to be arrested. Roentgen irradiation has a definite sedative effect on the diencephalic centers, which are involved in Parkinson's disease. Roentgen treatment should be combined or given alternatively with physical therapy and medicinal treatment with diethazine hydrochloride (diparcol) or panparnit (diethylamino ethyl-1-phenylcyclopentane-1-carboxylate hydrochloride) combined with phenergan (*N*-[2-dimethylamino-n-propyl] phenothiazine hydrochloride).

Book Notices

Recent Advances in Oto-Laryngology. By R. Scott Stevenson, M.D., Ch.B., F.R.C.S., Surgeon, Metropolitan Ear, Nose and Throat Hospital, London. Second edition. Cloth. Price, $6. Pp. 395, with 114 illustrations. The Blakiston Company, Division of Doubleday & Company, Inc., 1012 Walnut St., Philadelphia 5, 1949.

The first edition of this book was published fourteen years ago. It is not a formal discussion of the diseases in the field of ear, nose and throat but is a critical discussion of the newer and more important changes in this field. The advent of chemotherapeutic and antibiotic agents has had an enormous impact on the diseases and conditions in this area. The nature of what was once a surgical specialty has been completely altered in many respects. A whole generation of physicians has grown up that know only from hearsay the magnitude and gravity of mastoid infections, for instance, and their complicating entities of meningitis and brain abscess and severe and often fatal sepsis.

The author has brought an extensive experience to the job before him. With much skill he has selected the topics which he discusses. The chapter headings are of great interest. In addition to chapters concerned with chemotherapeutics and the antibiotics are included those on the latest methods of treating the deafened. In the past fifteen years, and as a direct result of wartime blast and explosive injuries to the ear, the handling of deafened persons has become increasingly efficient. It is not alone a matter of the use of vacuum tube hearing aids, which, needless to say, have become most compact and efficient, but of an over-all improvement in the education of the hard of hearing in which every medical, psychologic and physical aid are pressed into service. The author describes these advances in admirable fashion.

The chapter on otosclerosis is especially good. The statements on its genetic aspects, the relationship of pregnancy to otosclerosis, the latest notions on its pathology and the astounding modern contribution to the surgical alleviation of this sickness, is well done, as are those on numerous subjects, such as Ménière's disease, the surgical treatment of facial paralysis, aviation otolaryngology, malignant diseases of the nasal sinuses, the pharynx, larynx and esophagus, with pertinent comment on our present day idea of tonsils and adenoids and their infections. It takes much skill—which the author has—to relate the present to the past in a meaningful way in a field that has changed as rapidly as this one has. To his task must be brought a great deal of critical acumen as well as a large acquaintanceship with the literature. The author's style is simple and intriguing. It is a pleasure to see again this work in its new edition. It can be recommended wholeheartedly and without reservation.

Oto-Rhino-Laryngologie im Kindesalter: Einschliesslich der Endoskopie. Von Dozent Dr. Elemer Josef Jents. Mit einem Beitrag von Dozent Dr. Gottfried Arnold: "Störungen der Stimme und Sprache," und Professor Dr. Ernst G. Mayer: "Oto-rhino-laryngologische Röntgenologie des Kindes." Cloth. Price, 96 schillings; $9.60. Pp. 326, with 43 illustrations. Wilhelm Maudrich, Spitalgasse 1B, Vienna IX/2, 1949.

This is a complete textbook which concerns itself with the pediatric aspects of the diseases of the ear, nose and throat. It contains, in addition, a special portion devoted to disturbances of the voice and speech and one which concerns itself with otolaryngologic radiology in pediatrics.

This work is of the type familiar in prewar days, characteristic of that which emanated from the faculties of the great universities in the Germanic countries. All is in great detail, and the scholarship is evident. The ground work in anatomy and physiology is well done. The clinical portions are extensively discussed and well illustrated. If the work itself is any guide, then the impact of chemotherapeutics and the antibiotics has not yet been experienced in Austria. If this were not so, it would be impossible to describe as extensively as the authors do the various operations which used to be carried out in the treatment of severe infections of the ear, nose and throat and their complications and which today are hardly ever done, at least in the United States. If one wishes to have an example of a fine textbook which describes things as they were, this is an excellent sample, but present day otorhinolaryngology is not altogether apparent in this work.

Textbook of Virology for Students and Practitioners of Medicine. By A. J. Rhodes, M.D., F.R.C.P., and C. E. van Rooyen, M.D., D.Sc., M.R.C.P. Cloth. $5. Pp. 312, with 40 illustrations. Thomas Nelson & Sons, 385 Madison Ave., New York 17; Parkside Works, Dalkeith Road, Edinburgh 9; 3 Henrietta St., London, W.C.2, 1949.

There is a definite need for textbooks which are not too voluminous, so that the medical and veterinary student and those engaged in clinical practice may acquire some insight into the rapidly expanding field of virus and rickettsial research. The remarkable advances during the past ten years have removed these topics from the rather "distant" special research laboratory. At present, many general diagnostic laboratories are aiding materially in the diagnosis of virus and rickettsial diseases.

The authors are well recognized authorities in this field and have already written a comprehensive volume which is well known to all workers in the field of virus and rickettsial disease.

The present textbook is intended as an introduction to the field for students and practitioners. The role of viruses and rickettsiae as pathogenic agents in man and animals is considered as well as their nature and classification, technical methods employed, immune mechanisms and the therapeutic potentialities inherent in the peculiar host-parasite relationships which exist. A series of vignettes of each of the important diseases is presented in which the clinical features, histologic alterations, pathogenesis, causative agent, immunity and treatment are included. The illustrations, especially the photographs of the appearance of virus particles under the electron microscope and the technics for the inoculation of embryonated eggs, are excellent.

The authors have attempted to make this introductory volume so succinct, however, that one cannot but feel that many of the fundamental principles have been somewhat neglected. The stimulation, so desirable in an introductory text, is absent. No references to representative monographs or books are included; the clinical features of disease are listed and sometimes not too critically; terms such as LD_{50} are mentioned but not adequately explained. On the whole, the book is desirable for orientation but cannot be considered, without supplementation, as a teaching text.

Pre-Medical Physical Chemistry. By F. A. Matsen, Associate Professor of Chemistry and Physics, Jack Myers, Associate Professor of Zoology, and Norman Hackerman, Associate Professor of Chemistry, the University of Texas, Austin. Cloth. Price, $4.75. Pp. 344, with illustrations. The Macmillan Company, 60 5th Ave., New York 11, 1947 & 1949.

This book is aimed at adapting the fundamentals of physical chemistry to the study of the biologic sciences and is designed for training the premedical student in these chemical principles. It is not a textbook of physical chemistry, and, as indicated in the preface by the authors, it does not constitute a complete presentation of that subject. Mathematics forms a considerable part of the material and occupies the entire first chapter, as an introduction to more advanced concepts of quantitative expression. This, together with the other subject matter, is of a sufficiently advanced character to require a minimum background of general and analytic trigonometry and physics. Organic chemistry and calculus are considered desirable but not essential for use of the book. The contents are separated into chapters separately devoted to certain physiochemical phenomena, selected to provide material likely to be of interest to students of medicine. The numerous applications of the subject include such topics as atomic structure, gases, conduction and strong electrolytes, oxidation-reduction equilibria, buffers and biologic energy exchange. The authors indicate that the subject matter covered is more than sufficient for a single semester course and that the chapters are designed to be utilized individually, without relation to others, to permit some latitude in the choice of material by the instructor. What is considered to be of lesser importance or of relatively greater difficulty for the student is printed in small type.

This book is provided as a set of physiochemical principles rather than an exposé of facts on the subject, which definitely limits its usefulness. It will require considerable supplementation by the instructor to provide the student with a truly worth while understanding of the numerous concepts that are introduced. It may be questioned (the authors to the contrary) that

a brief introduction to the subject is destined to provoke interest rather than distaste for the subject. The attempt to deemphasize the difficult or uninteresting portions by brevity or small print does not seem necessary or desirable for those students most likely to benefit from such a course of study. Premedical students not determined or likely to enter the research field in medicine would probably find other subjects of greater usefulness. The subject is therefore considered to be in the category of elective material offered with the hope that students whose capabilities in medicine are not yet clear may later be better prepared for analytic deductions.

The book contains several useful tables, to which ready reference may be made. Inside the front cover is a list of the international atomic weights; inside the back cover is a table of four place logarithms, and within the text is the periodic table of the elements. There is an appendix of a few common physical constants and conversion factors and of symbols used in the text. A general index is provided at the end. A few references or problems for additional study are provided at the end of each chapter. The book is relatively free of typographic errors, the format pleasing and the book well printed.

Progress in Neurology and Psychiatry: An Annual Review. Volume IV. Edited by E. A. Spiegel, M.D., Professor and Head of the Department of Experimental Neurology, Temple University School of Medicine, Philadelphia, Pa. Cloth. Price, $10. Pp. 592. Grune & Stratton, Inc., 381 4th Ave., New York 16, 1949.

The thirty-four chapters of this volume represent reviews of the literature for 1948 covering the fields of neurology, psychiatry and neurologic surgery. They have been written by experts and will appeal to experts as well as to persons trying to keep up with the expanding fields. The chapters are condensed, sometimes too much, so that reading is not easy. While the aim of the editor has been to secure really critical reviews, some of the chapters suffer from a plethora of names and conclusions that bear little relation to one another. Other chapters are fine expositions of the advances that have occurred during the past year. The editor has met the problem of increasing pressure for space by limiting some of the reviews to alternate years and by focusing the attention on full discussion of restricted topics, such as the psychopathology of vision, instead of attempting to cover the whole field of neuro-ophthalmology. The chapters on the basic sciences, crammed with references, are excellent indicators of the investigative energy that is being devoted to discovering the fundamentals of the nervous system. Those on psychiatry reveal an almost equal enthusiasm for the application of psychiatric principles to the management of the larger problems of interpersonal and international tensions. One of the best features of these reviews is the frequent appearance of divergent views. Only when views diverge is progress to be expected.

Festschrift zum 80. Geburtstag Max Neuburgers: Mit 91 internationalen medicohistorischen Beiträgen. Band II, Wiener Beiträge zur Geschichte der Medizin, Herausgegeben von Dr. Emanuel Berghoff. Cloth. Price, $10; 100 Austrian schillings. Pp. 491, with illustrations. Wilhelm Maudrich, Spittalgasse 1B, Wien IX/2, 1948.

This is the second volume to appear in honor of Prof. Max Neuburger, the great medical historian and teacher. The first volume was published in 1928 on his sixtieth birthday and this one on the occasion of his eightieth birthday.

Professor Neuburger well deserves the honor conferred on him, as he has made many significant contributions to medical history. His work on the history of physiology and on the Vienna School of Medicine and his book on the history of medicine are particularly noteworthy. Professor Neuburger was the founder of the Museum of History of Medicine in Vienna, known as Josephinum. Many medical men in Europe and in the United States owe their interest in medical history to his inspirational teaching. Despite his advanced age and the many vicissitudes he suffered, Professor Neuburger is still actively engaged in medicohistorical research.

The *Festschrift* published in his honor is a veritable treasure house of medical history. Among its contributors are men of international renown. The majority of the articles are written in German; there are many in English and some in French, Spanish and Italian. Of special interest to physicians in this country are the fine articles written by American medical men: the article by Isaac A. Abt on Benjamin Franklin's Contributions to Medicine; B. Aschner's paper on "Medical History in Every-Day Practice"; Boyd and Elias' on the "Medico-History of the Pericardium"; Friedenwald's on the Vienna school; S. R. Kagan's on Victor Robinson; Krumbhaar's on two contemporary manuscripts bearing on the death of King Charles II of England; Olmstead's on Paul Bert; Rosen on Thomas Sydenham's medical ideas; Savitz on Katzenelson and Thorndike on baths.

In addition to the articles, there are tributes to Professor Neuburger written by the two outstanding medical historians, Castiglioni and Sigerist, and by Rosenthal. The anniversary volume in honor of Professor Neuburger should be a valuable addition to any medical library and to everyone interested in medical history.

Sanitary Science Notes: A Handbook for Students. By H. Hill, F.R.San.I., F.S.I.A., A.M.I.S.E., and E. Dodsworth, M.R.San.I., M.S.I.A., Chief Sanitary Inspector and Cleansing Superintendent, Borough of Harrogate, England. Second edition. Cloth. 7s.6d. Pp. 135. H. K. Lewis & Co., Ltd., 136 Gower St., London, W.C.1, 1949.

This is a handy digest of notes for the sanitary inspector, based on English practice. Special emphasis is given to building details and materials, without the coverage of milk or food sanitation that would be expected for American practice.

Much fundamental information on heating, lighting and meteorology is included. Rather complete conversion tables for areas, weight a[illegible] volumes are provided, together with formulas. Insects and pests are covered in some detail. Considerable space is given to tropical diseases, their cause and control, and the characteristics of infectious diseases, and identification and control of notifiable diseases.

The notes cover general information on water supply and waste disposal, both public and private, with indicated acceptable standards. In some respects these are not in keeping with American standards, especially for private systems of excreta disposal and sanitary drinking fountains.

Papers on Psycho-Analysis. By Ernest Jones, M.D., F.R.C.P., Consulting Physician to the London Clinic of Psycho-Analysis, London, England. Fifth edition. Cloth. Price, $8.50. Pp. 504. Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1948.

The present volume represents the fifth edition of Ernest Jones' collected papers. The author is one of the oldest living disciples of Professor Freud and was one of Freud's closest friends. For more than four decades Ernest Jones has been an outstanding contributor to the understanding of human behavior. Most of the papers contained in the collected works were originally delivered as lectures and as such represent an excellent collection of the author's contributions to dynamic psychiatry. Jones' influence on psychiatry has been worldwide; he has practiced for many years in London and spent considerable time in Canada and the United States. For many years he has been the nominal head of the International Psychoanalytic Society and as such has been an outstanding leader and scientific contributor.

This book is a must for students of dynamic psychology and is highly recommended to everyone who is interested in this subject. All of Jones' papers are written with clarity and conviction. There is an excellent glossary and an adequate index.

La fecondazione artificiale nella donna. Dal Sebastiano di Francesco. Paper. Price, 150 lire. Pp. 98. Istituto "La Casa," Via Mercalli 23, Milan, 1949.

In this small booklet the author discusses various aspects of artificial insemination in women. Among the subjects are the historical aspect, the legal and moral phases of the subject, the relation of artificial insemination to adultery, the effect on marriage, the religious side of the question, the social problems involved, the sentimental aspect, the use of husband's sperm as opposed to the use of donor's semen and the difficulties encountered in carrying out artificial insemination in using donor's semen. The author has presented his data and ideas in a well organized manner. He quotes American, British, French and Italian authors and also legal decisions handed down in these different countries concerning artificial insemination with donor's specimens. At the end of the booklet is a bibliography, which is not as representative as it should be. For those who concern themselves with artificial insemination and can read Italian, the book will prove to be interesting.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

AIR-COOLED BUILDINGS AND ELECTRIC FANS

To the Editor:—**Which is more dangerous to health, an air-cooled building kept at 80 F. or the use of electric fans during hot days?**

James M. Covington, M.D., Wadesboro, N. C.

ANSWER.—In hot weather when the skin and clothes are wet with perspiration, the cooling of buildings to 80 F. is more dangerous in chilling some persons than is the use of fans without artificial air-cooling. Experiments have shown that when subjects enter a space cooled to 80 F. with 50 per cent relative humidity from the hot out-of-doors (95 F. with 40 per cent relative humidity) the loss of body heat momentarily increases to a rate that is from five to ten times greater than the normal metabolic rate. In persons who are sensitive to cold, the peripheral vasoconstriction produced during the initial chilling period may persist for hours with shivering and discomfort.

A fan can cool only those body areas exposed to the wind and only by evaporation of sweat, since there is practically no heat loss by radiation and convection at 95 F. regardless of air velocity. The initial local chilling may produce vasoconstriction over the entire superficial area and reduction of sweating. Sooner or later, however, secondary vasodilatation will set in with a feeling of warmth, due to accumulation of metabolic heat in the body. A fan cannot give much relief from the heat under these conditions, regardless of current velocity. Moreover, too high velocities are enervating and unpleasant to most persons.

It is therefore obvious that, in the absence of body chilling, air cooling is a much more effective method of promoting comfort in hot weather than is the use of fans and that neither method is dangerous when chilling can be avoided.

SEVERE MYOPIA IN ONE EYE

To the Editor:—**A 6 year old girl, has 20/25 vision in the right eye and 20/15 with a correction of +0.75 sphere and 1/800 vision in the left eye and 20/40 with a correction of —8.25 sph. ⌒ —3.50 cyl., axis 65. The refraction was first done two years ago because of styes of the left eye. At that time the refraction in the right eye was the same and in the left eye vision was 1/300 and took a correction of —3.50 sph. ⌒ —1.25 cyl., axis 180. What is the recommended treatment, and what is the prognosis? There is no apparent muscle imbalance, and no fundus changes are present except a small temporal crescent.**

M.D., Michigan.

ANSWER.—A high degree of myopia in just one eye is infrequent, and no definite cause for it is known. No estimate can be given as to what the refraction will be at the age of say 20. After maturity there is little progression in myopia, according to the biologic theory. As to treatment, most patients tolerate a difference up to 4 D. of spherical correction between the two eyes and doubtless profit by the added vision given the incompletely corrected poorer eye. Thus in your case, you might well try: R. E. +0.75, L. E. —3.25 —3.50, axis 65.

GROUP O BLOOD AND ERYTHROBLASTOSIS

To the Editor:—**Group O blood is universal donor blood because its red corpuscles do not have antigens; therefore, red corpuscles of group O blood cannot be clumped. However, serum of group O blood has both anti-A and anti-B antibodies. Why don't these antibodies clump red cells of group A and group B recipients? What is the theory underlying treatment of an erythroblastotic baby with transfusions of Rh-negative blood? Doesn't this Rh-negative blood provoke the Rh-positive blood of the child to formation of anti-Rh bodies; why wouldn't better results be obtained by transfusing with Rh-positive blood of the same blood group as child?**

Pasquale F. Lombardi, M.D., Waterbury, Conn.

ANSWER.—1. The alpha and beta antibodies of group O blood, when transfused into recipients of groups A, B and AB, are prevented from clumping or lysing the blood of the recipients primarily through the effect of dilution. In the normal group O person the alpha and beta antibodies are usually of low titer; the immediate tenfold dilution in the recipient's circulation further reduces the titer and prevents the antibodies from damaging significantly the large mass of recipient's red cells. Moreover, the antibodies may also be partially neutralized by A and B group substances present in solution in the recipient's plasma. Since the antigen-antibody complex is dissociable, a large part of the antibodies eventually finds its way out of the circulation, to be further diluted, neutralized or excreted. However, these protective factors can be overcome when a so-called dangerous universal donor is used, namely, a group O donor with high-titered alpha and beta antibodies, especially when the recipient is anemic. Instances have been reported in the literature of severe hemolytic reactions, at times even fatal, due to the use of such donors. Therefore, it is safest to use group-specific donors, or if "universal" donors are used, their serums should first be titrated to make sure that they do not contain a dangerously high concentration of antibodies.

2. In typical instances, erythroblastosis results from the sensitization of an Rh-negative mother by an Rh-positive fetus in utero. The maternal Rh antibodies pass through the placenta into the fetal circulation and attach themselves to the Rh-positive cells of the fetus; in an extreme instance a stillbirth may result; in a less extreme situation the baby is born alive but is erythroblastotic. In most cases an excess of Rh antibodies is present free in the baby's circulation and tissue fluids at birth, in addition to the antibodies attached to the red cells. Therefore, when such babies are treated with transfusions of Rh-positive blood the disease is frequently aggravated or prolonged. That is why Rh-negative blood is used to treat erythroblastotic babies. The injection of Rh-negative blood into certain Rh-positive adult recipients results in the formation of antibodies but only in extremely rare cases, and with the resulting formation of Hr antibodies, not Rh antibodies. In newborn infants who are incapable of forming immune antibodies this would never occur. In fact, most immunizations are given to babies more than 6 months' of age because younger infants are usually incapable of producing antibodies. Therefore the injection of Rh-negative blood into Rh-positive newborn babies is never objectionable.

ACNE ROSACEA

To the Editor:—**What treatment is advised for acne rosacea in a woman aged 36 who has had the disease for several years and has not responded to any local medication? It does improve temporarily during her menstrual periods. Is there any basis for thyroid or estrogenic administration?**

Philip L. Blumenthal, M.D., Mandan, N. D.

ANSWER.—Acne rosacea usually responds to treatment with the application of an astringent lotion, such as lotio alba N. F., and a diet of bland foods designed to avoid the flushing that may result from hot or spiced foods. Roentgen therapy in fractional doses is instituted if there is a considerable amount of acne; for a lesser amount as good or better results may be obtained by cryotherapy with the application of a slush made of solid carbon dioxide, sulfur and acetone. Those cases that are due to Demodex folliculorum are treated with strong sulfur ointment. When possible, one should eliminate contributing factors, such as foci of infection, gastrointestinal disturbances or pelvic abnormalities. Some physicians advocate the use of dilute hydrochloric acid and riboflavin. Thyroid substance, though not usually administered unless there is evidence of hypothyroidism, and estrogenic substances in small doses are sometimes used on an empiric basis. The latter might be tried in this case.

ROENTGENOGRAMS IN PREGNANCY

To the Editor:—**Does the use of roentgenograms of a woman between eight and nine months pregnant offer an advantage over pelvimetry and the stethoscope for diagnosis?**

Herbert A. Porter, M.D., Boissevain, Va.

ANSWER.—Roentgenographic pelvimetry may be of much value as an aid in determining the outcome of labor, but one should use it only as an aid, remembering that physical examination and clinical judgment must be used to determine the course to be pursued. Until a more accurate way is developed to determine the measurements of the fetal head, a definite prognosis cannot be made in a given case except to say that a normal head should be able to pass through the pelvis. Unfortunately, several factors may change the course of labor. Strong regular pains will deliver a head in one pelvis, while in an equally good pelvis poor pains may fail.

Roentgenographic pelvimetry frequently will aid one in determining which is the most effective part of the pelvis, i. e., with some pelves the head will come down in a posterior or perhaps in a transverse position. If one knows in advance which part of the pelvis gives the most room, he may be able to rotate a head with forceps into the position which is most effective.

Roentgenographic pelvimetry is best done in labor and next best just before labor begins, because it is only at this time that the standing lateral view shows the head depressed in the pelvis to its fullest degree.

PROTEUS OX 19

To the Editor:—A woman aged 86 has had a temperature from 100 to 103.6 F. for over three weeks. Analysis of her blood gives a positive reaction for paratyphoid A in a 1:40 dilution, for paratyphoid B in a 1:80 dilution and for Proteus OX 19. What is the significance of these observations? The patient is in a semiconscious state and her speech is inaudible.

V. G. Logan, M.D., American Falls, Idaho.

ANSWER.—The positive blood reports for paratyphoid A in a 1:40 dilution and paratyphoid B in a 1:80 dilution may be considered as insignificant. However, presence of Proteus OX 19 may indicate either Rocky Mountain spotted fever or epidemic typhus. It is advisable to repeat the tests to learn whether any of the titers has risen. It seems probable that this will be true for Proteus OX 19.

RH SENSITIZATION BY TRANSFUSION

To the Editor:—The reply to the query regarding "Rh Sensitization by Transfusion" in *The Journal*, Oct. 8, 1949, is misleading. There is evidence available to prove that Carter's work is entirely incorrect. In tests on so-called Rh hapten provided by Mrs. Carter, I was unable to demonstrate any specific activity either by the inhibition test or by the complement fixation test. Also, injections of material provided by Mrs. Carter into a sensitized Rh-negative patient had no appreciable effect on the serum antibody titer. At a joint meeting of the sections of pediatrics and obstetrics at the New York Academy of Medicine, Feb. 11, 1949, Dr. Lester J. Unger described a carefully made and far more extensive investigation in which similar results had been obtained (Unger, L. J.: Observations on Curative and Preventive Treatments for Rh Sensitization, *Am. J. Obst & Gynec.*, to be published), and similar observations have been made by other qualified investigators. Significantly, when my co-workers and I submitted a number of serums to Mrs. Carter for complement fixation tests with her hapten, she was unable to identify correctly the serums derived from sensitized Rh-negative women. It also seems strange that other workers have been unable to duplicate her assay methods and had to send their preparations to her for testing. Unfortunate couples faced with the problem of Rh sensitization should not be deluded into false hope based on claims concerning Rh hapten.

To determine whether a type Rh_1 person is homozygous or heterozygous, anti-hr' serum is used and not anti-rh' serum as stated in the answer. Moreover, since type Rh_1 comprises five genotypes, tests with anti-hr' serum permit only a presumptive diagnosis of zygosity. In selected cases, tests on the complete family, including the parents of the husband, may permit an exact diagnosis of his genotype.

The inclusion of the British notations (CDe) in parenthesis after the International Rh-Hr notations is both unnecessary and confusing. The British notations are based on incorrect serologic and genetic concepts, while the international Rh-Hr notations have numerous advantages, including those of priority and simplicity (Wiener, A. S.: Anti Rh Serum Nomenclature, *Brit. M. J.* **1**: 805 [April 24] 1948). Moreover, to argue that it is simpler to use duplicate notations in place of a single, simple and unambiguous nomenclature is nonsense.

A. S. Wiener, M.D., Brooklyn.

CANKER SORES

To the Editor:—With respect to the answers to two questions in Queries and Minor Notes in The Journal, Oct. 1, 1949, and one question printed earlier this year, I wish to call attention to the treatment of recurrent herpes simplex with smallpox vaccination, administered intradermally, whether the herpetic eruption is on the lips or elsewhere. The terms canker sore, aphthous stomatitis and herpetic stomatitis were all used on one page of The Journal without any indication that they are synonymous. Arnold (Herpetic Stomatitis Treated by Intradermal Smallpox Vaccine, *Proc. Staff Meet. Clin., Honolulu* **10**: 85 [Aug.] 1944) reported the response of recurrent herpes simplex to smallpox vaccine administered intradermally as compared with vaccination using the usual scratch technic. The majority of patients respond favorably to the intradermal administration of smallpox vaccine, but some remain refractory to that form of treatment.

A variant of the technic used by Arnold follows: On the first day vaccinate the patient using the usual scratch technic. If a "take" occurs, wait until the reaction has subsided; if no "take" occurs, draw 0.1 cc. of sterile isotonic sodium chloride solution into a tuberculin syringe with a no. 25 hypodermic needle attached and then mix in the syringe with the contents of one capillary tube of smallpox vaccine containing brilliant green (available commercially). The first injection should consist of one fourth of the aforementioned mixture and three days later, one half of the mixture. About ten more injections of the entire 0.1 cc. of mixture should be administered at three day intervals. An injection of two capillary tubes of vaccine, mixed with the 0.1 cc. of isotonic sodium chloride solution, may be administered if no reaction appears.

The injections should be administered intradermally and may be made anywhere, but a site near the deltoid muscle is preferable. This course of treatment may be repeated if desired. I have observed it to be successful in the majority of several dozen such herpetic eruptions and particularly one more widespread eruption already reported (Savitt, L. E., and Ayres, S. Jr.: Persistent Multiple Herpes-like Eruption, *Arch. Dermat. & Syph.* **59**: 653 [June] 1949). Failure of treatment using this technic, particularly in a case of aphthous stomatitis, would be presumptive evidence that the lesions in that case were not caused by herpes simplex or that other factors are present. Other causes not mentioned in the answers to the queries regarding aphthous stomatitis are the consumption of walnuts, hard candies and red (erythrosin-containing) frostings and the use of toothpastes or mouthwashes.

Leonard E. Savitt, M.D., Los Angeles.

PARENT BLOOD IN MEASLES MODIFICATION

To the Editor:—The answer to the query on "Parent Blood in Measles Modification" (J. A. M. A. **140**: 1070 [July 23] 1949) does not mention the very real danger of sensitizing an Rh-negative girl by the injection of Rh-positive blood from one of her parents. As this sensitization may destroy forever her chance of having liveborn or normal children, Rh testing before the injection of blood is definitely indicated.

S. A. Doxiadis, M.D., Children's Hospital, Sheffield, England.

CANCER OF CERVIX IN JEWS AND NON-JEWS

To the Editor:—I would like to mention other literature concerning cancer of the cervix in Jews and non-Jews which may be of interest. Wolff, comparing the percentage distribution of malignant new growths in female genital organs and breasts in Berlin, Germany, between the general population in 1932 to 1933 and the Jewish population in 1924 to 1926 and 1932 to 1934, said, "It would appear that, proportionately, women of Berlin have twice as much carcinoma of the uterus as Jewesses."

Handley gave the following opinion:

"There is evidence that existence of phimosis or, in its absence, carelessness as to subpreputial hygiene and cleanliness is a menace even more serious to the female sex than to the sex in which they originate. Briefly stated the evidence is, that though certain forms of cancer—of the liver, the breast and the rectum for instance—affect Jews more frequently than non-Jews, Jewish women show a much smaller liability to carcinoma of the cervix. In Amsterdam the non-Jewish inhabitants were found by Hoffman to show an incidence of cervical cancer of 10 per 100,000, while the corresponding figure of Jewish women was less than 4."

Maurice Sorsby commented on the relative freedom of Jewish women from cancer of the uterus. Vineberg, in the outpatient department of the Mount Sinai Hospital of New York, observed among 19,000 patients, of whom 95 per cent were Jewish, only 18 cases of uterine cancer, and 9 of these were in non-Jewish women. Thus the incidence among Jewish women was only one-eighteenth that among non-Jewish women.

Two other investigations, by Rubin, at the same hospital for other years gave incidence ratios of 1 to 7½ and 1 to 15 for Jews and non-Jews. Similar evidence is quoted by Sorsby from the Mayo Clinic. In every thousand non-Jewish patients seen at the Mayo Clinic, 6 have carcinoma of the cervix; in every thousand Jewish patients only 1 has carcinoma of the cervix. Similar evidence is quoted by Sorsby from Paris, Budapest, Munich, Amsterdam and Montreal. He concludes, "All the available evidence is therefore unanimous in pointing to a definitely lower incidence of uterine cancer among Jewish women." He believes that the hygienic ritual imposed on women by the Mosaic law accounts for their immunity, but the explanation seems unconvincing (Handley). The cervix exists normally under the same optimal conditions for bacterial life which are found under the phimotic prepuce. It is not surprising, Handley elaborated further, that marital infection with the subpreputial flora may lead to cervical cancer in the course of twenty or thirty years, just as in the male it leads to penile cancer. Immunity to penile carcinoma and partial immunity to cervical cancer are not constitutional peculiarities of the Jewish race.

As evidence for the foundation of his theory that the infrequency of carcinoma of the cervix in Jewish women is the result of circumcision Handley gives his observations made in the Fiji Islands. According to his information there are about 90,000 natives and 70,000 immigrated Indians, populations which do not mix. The Fiji Islanders practice circumcision at puberty; the Indians do not. An exact account of hospital reports in Suwa (Fiji) for eight years, 1925-1932, reveals only 3 cases of cancer of the cervix in Fijian women and 26 cases in Indian women. Thus the smaller of the two population groups, the one not practicing circumcision, shows an incidence of cervical cancer in its women more than eight times greater than the incidence of the disease in women of the other, or circumcised nation.

Handley draws the conclusion, "The freedom of the Fijian race from cervical cancer is therefore not due to any racial immunity to cancer, nor can it be explained as illusory and due to reluctance to seek hospital treatment. It must be attributed to the protection which the hygienic operation of circumcision affords against mixed bacterial infections of the cervix during coition. It is customary to ascribe cervical cancer to trauma of the cervix during parturition, but if this were the case both races should be affected equally." Handley therefore recommends for the prevention of cancer preputiotomy for all male infants at birth for the abolition of penile cancer, the dimunition of cancer of the cervix in women to one sixth of its present incidence and a probable incidental lowering of puerperal mortality rate. Instruction of men in the importance of personal hygiene is recommended.

The last sentence of the answer to the query mentioned stated, "Apparently there is no available information with respect to the presence of a carcinogenic agent in smegma that is supported by experimental evidence."

It may be of interest to point out that work in this direction was reported by Alfred Plaut and Alice C. Kohn-Speyer in *Science* (105: 391 [April 11] 1947). The authors used human smegma only in the first experiments, but as this could not be obtained in sufficient amounts, horse smegma was substituted, this particular substitution being chosen because penile cancer is frequent in the horse.

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Handley, W. S.: The Prevention of Cancer, Lancet **1**: 987, 1936.

Hoffman, F. L.: The Cancer Mortality of Amsterdam, Holland, by Religious Sects, Am. J. Cancer **17**: 142, 1933.

Sorsby, M.: Cancer and Race: A Study of the Incidence of Cancer Among Jews, London, John Bale, Sons & Danielsson, 1931.

Eugen Guttmann, M.D., Los Angeles.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, SEPTEMBER—DECEMBER 1949

Titles have been listed or abstracts made of important articles in the following journals in the Current Literature Department of THE JOURNAL during the past four months. Any of the journals, except those starred, will be lent by THE JOURNAL to subscribers in continental United States and Canada and to members of the American Medical Association for a period not exceeding three days. Three journals may be borrowed at a time. No journals are available prior to 1938. Requests for periodicals should be addressed to the Library of the American Medical Association and should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Thus most of these journals are accessible to the general practitioner

Acta chirurgica Scandinavica. Stockholm.
Acta haematologica. Basel.
Acta medica orientalia. Jerusalem
Acta medica Scandinavica. Stockholm.
Acta oto-laryngologica. Stockholm.
Acta tuberculosea belgica. Brussels.
Acta tuberculosea Scandinavica. Copenhagen.
American Heart Journal. St. Louis.
American Journal of Clinical Pathology. Baltimore.
American Journal of Digestive Diseases. Fort Wayne, Ind.
*American Journal of Diseases of Children. A. M. A., Chicago.
American Journal of Hygiene. Baltimore.
American Journal of the Medical Sciences. Philadelphia
American Journal of Medicine. New York.
American Journal of Obstetrics and Gynecology. St. Louis.
American Journal of Ophthalmology. Chicago.
American Journal of Orthopsychiatry. New York.
American Journal of Pathology. Ann Arbor, Mich.
American Journal of Physiology Baltimore.
American Journal of Psychiatry. New York.
American Journal of Public Health. New York.
American Journal of Roentgenol. and Radium Therapy. Springfield, Ill.
American Journal of Surgery. New York.
American Journal of Syphilis, Gonor. and Venereal Diseases. St. Louis.
American Journal of Tropical Medicine. Baltimore.
American Practitioner. Philadelphia.
American Review of Tuberculosis. New York.
Anales de la Facultad de ciencias medicas. Asunción.
Anales del Instituto de maternidad y asistencia social. Buenos Aires.
Anesthesiology. New York.
Annals of Allergy. Minneapolis.
Annals of Internal Medicine. Lancaster, Pa.
Annals of Otology, Rhinology and Laryngology. St. Louis.
Annals of the Rheumatic Diseases. London.
Annals of Surgery. Philadelphia.
Annals of Tropical Medicine. Liverpool.
Annals of Western Medicine and Surgery. Los Angeles.
Archiv für Kinderheilkunde. Stuttgart.
Archiv für Psychiatrie und Nervenkrankheiten. Berlin.
Archives des maladies du coeur. Paris.
*Archives of Dermatology and Syphilology. A. M. A., Chicago.
Archives of Disease in Childhood. London.
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The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "OS," Organization Section; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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SOCIETIES AND OTHER ORGANIZATIONS

Acad.—Academy	*Indust.—Industrial*
Am.—American	*Inst.—Institute*
A.—Association	*Internat.—International*
Coll.—College	*M.—Medical*
Commn.—Commission	*Med.—Medicine*
Comm.—Committee	*Nat.—National*
Conf.—Conference	*Pharm.—Pharmaceutical*
Cong.—Congress	*Phys.—Physicians*
Dist.—District	*Soc.—Society*
Div.—Division	*Surg.—Surgery*
Found.—Foundation	*Surgs.—Surgeons*
Hosp.—Hospital	*S.—Surgical*

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